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NeXTWORLD

Vol. 3, No. 5 *SEPTEMBER 1993*
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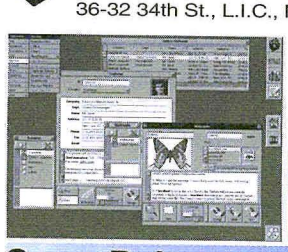

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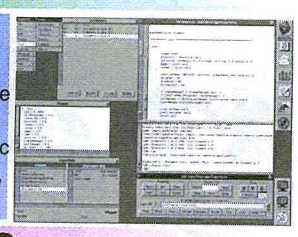

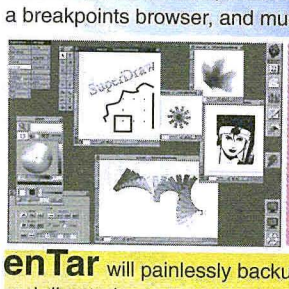

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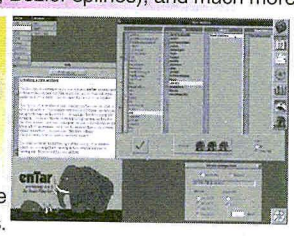

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Well, *NeXTWORLD orker*. Much as I'd like cPhee and Jeremy Bernst uch narrower: To provid ings together users a EXTSTEP products.

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On *The New Yorker* magazine's famous cover, the world beyond the Hudson river fades away to insignificance. Los Angeles pops up in the distance while Japan lies low on the horizon. It's a brilliant self-parody of the provincial view of the supposedly worldly Manhattanite, who has the arrogance to believe that little of importance happens west of Hoboken.

Some developers have accused this magazine of suffering from a similar myopia. On our version of the map, Silicon Valley – and especially Redwood City – would loom large, while significant bases of NEXTSTEP activity in Chicago, New York, and Europe would show up as outposts. A tiny onion dome would represent Moscow.

Bright Lights, Small City

DAN RUBY

Well, *NeXTWORLD* is not *The New Yorker*. Much as I'd like to publish John McPhee and Jeremy Bernstein, our mission is much narrower: To provide information that brings together users and providers of NEXTSTEP products.

When we look east, or any direction, we see pockets of opportunity – places where developers and a community of users form a hotbed of NEXTSTEP activity. Places like Vancouver, Hamburg, Sydney, LaSalle Street in Chicago, Washington, DC.

Also the San Francisco Bay area. There was grumbling from some that the primary qualification for receiving a Best of Breed award was a phone number in the 415 area code. Not true: Of our BoB winners, only four were local. Ten others were from outside the area, including three from Europe.

There are two determinants for what products and user activities get attention in *NeXTWORLD*. First, we have to know about them. Since we're busy, it may require a follow-up call, but between the Internet, telephone, fax, and package-delivery services, all developers have equal access to us. We also welcome visitors.

Second, we apply judgment to the relative significance and worth of products. It wouldn't be much of a magazine if we printed unfiltered information. We decide what gets coverage, how many cubes to give, who gets awards. This judging role carries with it a serious responsibility to be fair and impartial. We have to be fully informed. We must not bring biases to the table. We must not be too impressed with our own importance.

One thing that is not a determinant is a company's advertising budget. It shouldn't be necessary to say this, but *NeXTWORLD*'s editorial product is not for sale. We call 'em as we see 'em.

While we wouldn't exist without NeXT and we couldn't afford to publish without the support of third-party advertisers, our loyalty is first and foremost to NEXTSTEP users. If we serve our readers, then we serve the market. It doesn't matter if they live in Palo Alto, Paris, or Altoona.

★ ★ ★

All right, everyone out there in Paducah, Keokuk, and South Succotash: I want your feedback. What kinds of articles would you like to see more or less of? Tell me what's wrong with our graphics. Are there other types of information or services we can provide that will make your life as a NEXTSTEP user easier and more productive? Send mail to druby@nextworld.com. I won't reply to every message, but I will consider all input carefully as we continue to evolve *NeXTWORLD* into the best magazine it can be.

DAN RUBY *is editor in chief of* NeXTWORLD.

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MetroTools 2.0
"Convenience and value recommend this bag of tricks" - NeXTWORLD, Winter '92
"MetroTools' ability to reduce the size of the icons makes it a no-brainer for notebook computers", "The Norton Utilities of the NeXT world!" - Mike Duggan, NEC
"Does everything as advertised!!" - John Kobelansky
"MetroTools has done a great job integrating utilities that make NEXTSTEP life easier","MetroTools made the quantum leap into my dock and into my heart" - Jiro Nakamura,NeXTwatch
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The three Ps

Drivers, drivers, my kingdom for some drivers!

I'm running NEXTSTEP 3.1 for Intel on a high-end '486 DX2/66, 525MB SCSI disk, and an S3 local-bus video board, but I cannot talk to our corporate network, nor can I run in anything more than 640-by-480 grayscale mode – despite the fact that I'm using a 3COM Etherlink III and an S3-805 local-bus video card. Both of these devices have drivers in 3.1, but they both don't work.

Here, in my opinion, is what NeXT needs to do in a hurry:

- Get out the CD-ROM drivers update sooner than later – or ship 3.2 in September with SoftPC bundled, as promised.
- Provide drivers for non-PostScript printers and create an 8-bit color mode, to open up NEXTSTEP to virtually thousands of 1MB video cards running at 1024 by 768 pixels with 256 colors.
- Port, port, port – get NEXTSTEP onto as many RISC-based platforms as possible.
- Find partnerships: Need I say more?
- Refine position, marketing, and channels; cute videos aren't going to reach the mass market.

Having said all that, I firmly believe NeXT's future is assured, provided that it partners, ports, and positions furiously in the next 12 months.

JOHN EDUARD VENEMA
North Sydney, Australia

Driver license?

After impatiently awaiting NEXTSTEP for Intel, I was totally disappointed after seeing it and reading the hardware list. NeXT needs to at least triple the number of drivers it provides. My suggestion: Sell the developer's version for the price of a run-time system if the purchaser delivers a driver within eight weeks.

THYL ENGELHARDT
Tübingen, Germany

NEXTSTEP for Intel is a very fine product. Now, if only I could make it work with my hardware. I have a Sound Blaster Pro sound card, but I don't have a driver for NEXTSTEP. It goes the same for my Telepath fax-modem that I cannot use under NEXTSTEP because of the lack of drivers. I can't even use my HP4 printer in non-PostScript standard mode.

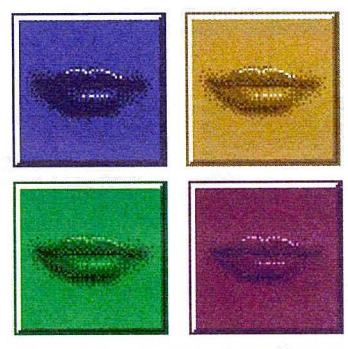
JACQUES GARBI
Lausanne, Switzerland

Support needed

When I returned from NeXTWORLD Expo and attempted to install 3.1 on my Dell PC, I could not get past the boot floppy disk with my ATI Ultra Pro video card installed. This card is listed in hardware-compatibility guides as being supported. I made several calls to NeXT, Dell, and ATI. While everyone that I spoke to was interested in my problem and offered suggestions, I have installed NEXTSTEP 11 times and still don't have 1024-by-768 color.

Ultimately, what decides the success or failure of NeXT will not be the pricing of its OS or a lack of applications, but how it responds to problems like mine.

BARRY VINSON
New Iberia, Louisiana



LIP SERVICE

Trickle-down technology

Dan Ruby's claim that Jim Opfer "introduced e-mail, portable computers, and video-conferencing systems" to the Reagan White House "long before the rest of the world discovered these technologies" is hard to believe, considering the stories that have come out this year about the antiquated state of White House information technology. E-mail seems to have been most popular among the NSC types in the Reagan White House, who used it for a textbook demonstration of why not to use information systems that isolate you from real-world contextual information: Bud McFarlane and Ollie North used the PROFS e-mail system to egg each other on to the Iran-contra scandal.

FRED ZIMMERMAN
Ann Arbor, Michigan

You're right that the White House didn't keep the technology train rolling after its initial installation of a "closed" e-mail system. But if you think back to 1982, there were few, if any, corporations on any e-mail system, much less connected openly to the rest of the world. Those of us in the White House at that time were the second corporate account in the world that had PROFS; we literally helped IBM design it.

Similarly, who in 1982-83 was doing cross-country video conferencing? Not many, because the video codecs (compressors/decompressors) and communications lines were too expensive – only those who could justify the expense used them.

The Bush White House merely followed what the Reagan administration had done and did not move to modernize the White House for the '90s. It took a new administration of young turks to wake everyone up. – Jim Opfer

Emulator's new clothes

After reading the April/May "Windows Dressing" article, I wonder what kind of NeXT you were using. It seems like it had to be one of those mythical 40MHz Nitro '040s.

I have a NeXTstation Turbo Color with 32MB of RAM at home and a 20MHz '386 Compaq at work. So when I installed SoftPC with Windows 3.1 on my NeXT, I expected performance only slightly worse than my office Deskpro. I got an abysmally slow PC in a window. The screen redraw and mouse-action functions were sluggish beyond belief.

So what does "as fast as a '386/16" really mean? Does it mean messing with system buggers in the ROM monitor as the SoftPC Read Me file suggests? Or fiddling with color settings somewhere? All this reminds me too much of my real PC. Until now, no NeXT app has recommended editing low-level configuration data (and in the monitor of places). Indeed, maybe SoftPC emulated the PC experience all well.

DAVID L. NEUMANN
Exxon Production Research
Houston, Texas

Our reviewer tested SoftPC on several NeXTstations, including a never-released Nitro. On a stock Turbo, he found performance to sluggish but acceptable. Now, we are looking forward to NEXTSTEP 3.2 to discover how SoftPC performs on Intel hardware. –NW

Ask and receive

From my point of view, you can your entire year's subscription p with some good reviews of the platforms certified to run NEXTSTEP. In particular, some serious benchmarking of the machines should be done. Do you have plans along these lines?

BILL BROWN
Hollis, New Hampshire

We take our first shot in this issue testing developer boxes. We plan expand our evaluation criteria in future as we continue to review NEXTSTEP PCs. – NW

Color blind

NeXTWORLD has gone overboard in the color and font department.

In the June/July issue, the article titled "Pyromania!" has one virtually unreadable figure caption, since the text is as black as the underlying texture of the burning Cube. Another not-so-great choice of colors appeared in the NEXTSTEP PCs article. Red figure captions over orange images are highly unreadable. In the same article, one figure uses white text – too bad it's over light-colored areas in the figure.

ALVIN JEE
Santa Cruz, California

NeXTWORLD *welcomes your comments. Please send them to Letters at* NeXTWORLD, *501 Second St., San Francisco, CA 94107; or e-mail: letters@nextworld.com.*

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The Big Deal

ENTERPRISE PARTNERSHIP

WHEN STEVE JOBS STOOD ON STAGE AT NEXTWORLD EXPO AND ANNOUNCED a partnership between NeXT and Hewlett-Packard, it was the beginning of a new direction for the two companies. It also marked the end of a long process of courtship and negotiation.

By the second half of 1992, it had become evident to managers at NeXT that there was a mismatch between the needs of its biggest customers and NeXT's ability to serve them adequately.

NeXT's sales and marketing increasingly emphasized enterprisewide, mission-critical applications, but the company was not scaled properly to deliver services such as 24-hour support, dedicated account reps, or wide-area networking. Customers such as Swiss Bank Corporation (SBC) and Chicago Research and Trading were becoming increasingly vocal in urging NeXT to find a partner for enterprise systems.

"Swiss Bank is not looking for a hardware vendor. What we need is a strategic relationship with a technology company that supplies a broad range of hardware, software, and service," says Dwight Koop, SBC's director of information technology and leading a ProNeXT representative.

Historically, enterprise computing solutions, as opposed to departmental or personal-computing solutions, have been provided by only a small handful of vendors such as IBM, Digital Equipment Corporation, and Hewlett-Packard. "It was IBM that first used the term 'enterprise,' " says Ron Weissman, NeXT's director of corporate marketing. "It implied that the company could supply cradle-to-grave products and service."

In the new world of distributed, open systems, the old model of mainframe-oriented enterprise solutions is no longer relevant. NeXT's object technology fits well with the trend toward downsized systems, but the company was too small to assure easy integration of its software with enterprise systems.

PHOTOGRAPH BY RICHARD MORGENSTEIN

NeXT's **Steve Jobs** *and HP's* **Ruann Ernst** *answer questions after the Object•Enterprise announcement at NeXTWORLD Expo.*

"Our sales model did not include the support and infrastructure of enterprise systems, but our customers were demanding that," says Jim McCrory, NeXT's manager of financial services marketing.

Beginning last fall, NeXT initiated talks with the handful of companies that could serve as enterprise partners. When Steve Jobs met with HP President Lou Platt in November 1992, the two CEOs recognized a mutual interest.

HP was interested in NeXT's approach to distributed objects. It also was impressed with NeXT's success in the trader-workstation market, a venue where HP was losing a lot of potential sales to archrival Sun Microsystems. There also seemed to be a synergy between the companies because of their respective strong roots in engineering.

Instead of assigning the relationship to a group within HP, Platt put the opportunity on the table for managers to pick up if they wanted. When a large group of senior HP managers came to NeXT for a presentation, many came away impressed. Though NeXT's people talked of various potential markets, a manager from HP's server division, Ruann Ernst, saw immediate benefits for HP in financial services. NeXT's portable objects and inroads into the trader-workstation market could bring the power of HP's servers to bear on complex financial tasks, while traders stayed connected to their individual workstations.

The two sides entered a period of technical evaluation, with NeXT's UNIX guru, Avi Tevanian, working with key engineers from HP's workstation and server groups.

The negotiations were not happening in a vacuum, however. Various other initiatives at HP seemed to overlap with the emerging deal, and some groups within HP worried that a NeXT partnership could confuse these relationships and projects. For example, HP was instrumental in the negotiations with major UNIX vendors that would result by March 1993 in the announcement of COSE (Common Open Systems Environment), an alliance from which NeXT was noticeably absent.

In particular, NeXT's reputation as a nonstandard platform worried some HP managers, for whom standards and open systems are a religion. HP pushed NeXT to make its object technology comply with emerging object standards such as DCE, DME, and CORBA.

Meanwhile, NeXT was reaching a crossroads on another front. By the beginning of this year, company executives had arrived at the painful decision to discontinue hardware design and manufacturing, a move it announced to the world in early February.

For HP, the ramifications of the announcement were mixed. On one hand, it simplified any potential conflict over workstation sales. But the change left NeXT looking unstable as a long-term partner. Around the same time, the departure of NeXT sales chief Todd Rulon-Miller, one of the key players until then, seemed to add to doubts about NeXT's viability. The deal was in jeopardy.

Things began to turn around in March. For one, NeXT's concurrent quiet flirtation with Sun Microsystems came to an end. For another, the two teams of negotiators, now led by Pat Vais on the NeXT side and including a range of managers in addition to Ernst on the HP side, agreed to narrow the scope of the deal to the financial-services market. Other opportunities could come later after the relationship had borne fruit on Wall Street.

"We ageed that the deal had to be concrete. Let's hit some home runs first and then look at other opportunities," McCrory says.

Now only one more critical element needed to fall into place – a way to package the deal to communicate the benefits to customers. It happened in the parking lot of HP after a long Friday meeting.

"We wanted a brand identity like 'intel inside,' " Weissman recalls. The basic equation of the deal was that NeXT provided the objects and HP provided the enterprise. As he left the meeting with Steve Jobs, the phrase popped into Weissman's head: Object•Enterprise. In two words it summed up the value of the strategy.

In practice, the Object•Enterprise strategy is a NeXT program that is not exclusive to any one partner, but the HP side loved the concept. All the pieces were in place for a deal, except the legal details.

Now that the two sides were down to contract language, the talks dragged on throughout March and April. Several times the companies thought they had the deal concluded, though it wasn't until the middle of May, just before NeXTWORLD Expo, that the ink finally dried.

by DAN RUBY *and* DAN LAVIN

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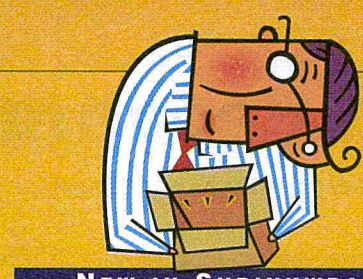

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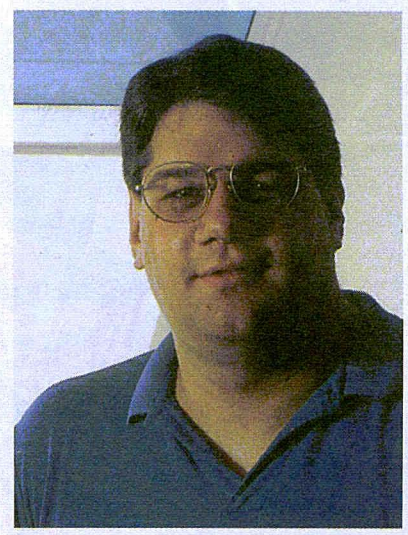
Asset Management

COMMENTARY

I JUST GOT BACK FROM OBJECTWORLD WITH ENCOURAGING NEWS: OBJECT technology is finally getting the attention it deserves, and NeXT is still way out in front technologically. If NeXT finishes solving its business problems, it has a legitimate chance to own a big piece of this market.

Interest in object technology is exploding. This year's ObjectWorld conference was 30 percent larger than last year's. According to a recent survey in *Computerworld*, 42 percent of major U.S. corporations are evaluating how object technology can benefit their enterprises. But implementation is lagging; only six percent have deployed object technology in production systems.



Custom-app developer **Gregory Anderson**

These statistics suggest an incredible opportunity: 36 percent of large U.S. companies are learning about the benefits of objects but apparently aren't impressed enough with the current offerings to use them in mission-critical systems. The first vendor to position object technology as a viable solution for the backlogs facing corporate MIS departments will find a receptive and educated audience.

Tools developers are paying attention to this trend. Almost every tools vendor at ObjectWorld had a forms designer styled after InterfaceBuilder and a multidatabase access layer like DBKit. Fortunately for NeXT, all contain flaws and omissions that will leave veteran NEXTSTEP developers underwhelmed. Only Smalltalk vendors seem to understand the importance of extensibility through palette-controlled custom objects.

Microsoft was missing in action, which makes me wonder how serious Bill Gates is about objects. Taligent contributed speakers to the conference sessions but had no presence on the Expo floor. That makes sense, considering Taligent doesn't have a shipping product and won't commit to a delivery date more specific than the "mid-'90s."

With the big names missing, no undisputed leaders have emerged. Every object-oriented database vendor claims to be No. 1 at something. C++ is the most widely used object-oriented language, but purists decry its lack of dynamic binding. NEXTSTEP is the leading object-oriented OS, but only because nothing else is shipping.

To solidify its claim to the leadership position in object technology, NeXT needs more than great technology; it also needs to re-establish business credibility. Earlier this year, I believed NeXT's business problems were near-fatal, but lately I have seen encouraging signs: new vice-presidents

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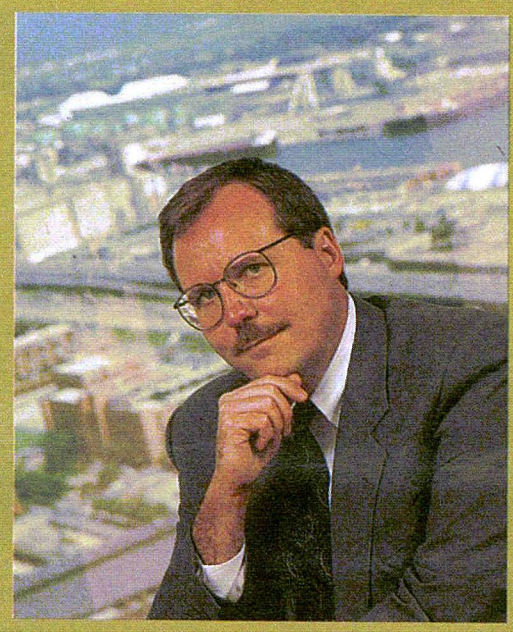
Black Was Beautiful

TRANSITION SURVIVOR

NEWS THAT NEXT WAS DROPPING ITS HARDWARE LINE HIT FEW PLACES HARDER THAN TRIMARK INVEST-ment Management, Canada's third-largest mutual-fund company. Based in Toronto, Trimark had recently spent $4 million replacing its aging IBM System 38 with two monster Pyramid servers (boasting nine central processors and 48GB of on-line storage) and 130 NeXTstations, making it NeXT's largest commercial site north of the border.

But whereas NeXT's U.S. customers were grumbling about being forced to buy black hardware to run NEXTSTEP, Trimark's position was completely reversed: The company loved NeXT's workstations and only slowly warmed up to NEXTSTEP's graphical interface.



Trimark's **Brad Badeau** *misses black hardware but has kept NEXTSTEP development on track.*

It was a little more than two years ago that NeXT narrowly beat out Sun Microsystems for the sale. Trimark was immediately attracted to NeXT's integrated system, high-resolution monochrome screen, and low price. But what clinched the deal was an image-management app that a NeXT engineer threw together in two weeks to demonstrate the ease of building custom applications. Faster than you can say "eclipse," Sun was out.

Trimark had already developed a number of applications based upon Oracle Forms. Rather than throw away the work, Trimark convinced Oracle to make a version of Forms available on NEXTSTEP. Although Oracle Forms runs only from a terminal emulator, the NeXTstation's MegaPixel Display let Trimark employees have multiple applications running at the same time. People who didn't need as much power were given dumb terminals connected to the NeXTstation's serial ports.

In the meantime, Trimark teamed up with Raivac, a Toronto-based consulting firm, to begin writing a series of NEXTSTEP-based custom apps. The first program, called Market, fields requests from Trimark's brokers for advertising dollars and other marketing expenses. The program scans the Trimark database, calculates the broker's commission, issues the check, and prints a letter to the broker. "It's as mission-critical as you can get for the marketing arena," says Dave Thompson, president of Raivac.

Then came NeXT's announcement that it was discontinuing hardware, followed by news that it was closing its Canadian sales office. "We were very disappointed. It made us re-evaluate our decisions," says Brad J. Badeau, the Trimark senior vice-president who had made the original push for NeXT. "Our real decision was going forward to develop the application or [keep] using Oracle Forms and migrate to other environments."

Unable to purchase any new hardware from NeXT, Badeau looked at his options: NEXTSTEP on Intel, a Windows-based operating system, Sun machines, or another workstation vendor. PC hardware seemed affordable, but, configured as a NeXTstation, it soon became quite expensive. On the other hand, Badeau heard of problems with Solaris and Windows. So he decided to stay the course. Needing another batch of workstations to satisfy its fast-paced expansion, Trimark put out a request and purchased 40 NeXTstations – used – from a few of NeXT's former customers. "We were basically sitting on the fence until NeXTWORLD Expo."

Now that Expo is passed, Badeau is once again trying to sort out Trimark's options. Staying with NEXTSTEP seems the most likely choice – largely because of the custom applications that the company has under development. Trimark also has hired a management-consulting firm to analyze the company's flow of information, with the hope of implementing the image-management application that NeXT first used to close its sale to Trimark.

But the company is holding off on buying Intel hardware until others have figured out which combinations of boards, interfaces, and adapters offer the best price-performance ratio. "We've been waiting for a lot of these decisions to be made for us," admits Brian Deegan, vice-president of information systems. Trimark's looking for one company to offer a reliable, integrated NEXTSTEP-based Intel computer, with good performance, at a relatively low price. "That was one of the things so nice about NeXT hardware," recalls Deegan wistfully.

by SIMSON L. GARFINKEL

Asset Management

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for sales and marketing; outside directors on the board; a new public-relations strategy; and hearty promotional pricing for NEXTSTEP.

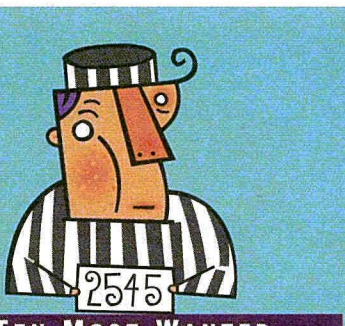
Most importantly, NeXT has gathered a surprisingly large number of public allies, chief among them Hewlett-Packard. The Intel partners, Ingram, and systems integrators all provide broader access to customers than NeXT could achieve on its own. But only the HP deal sends a powerful signal about NeXT's viability. Portable Distributed Objects will ship fairly soon, but the PA-RISC port won't be available until the middle of next year. If HP believes NeXT will be around long enough to deliver, that's good enough for me.

HP also will insist that NeXT comply with industry standards, which should satisfy the skeptics who argue NeXT is too proprietary. HP, IBM, and Sun announced at ObjectWorld a partnership to define certain distributed-object standards; the HP-NeXT deal seems likely to bring NeXT into that fold. I have been told that the combined HP-NeXT engineering team will create the seminal implementation of some standards that now exist only on paper. NeXT should seize this opportunity to wire some of its proven technology, especially Objective-C, into the project.

Finally, HP will be a strong partner in penetrating NeXT's chosen strategic market, financial services. In no other industry are the time-to-market advantages of object-oriented application development so compelling. Success in this market will bring leveraging opportunities, because all businesses use financial services.

Many partisans are disappointed NeXT is not pursuing the mass market, but that would be a waste of resources. Object technology has not matured to the point of "must have" status for the masses. NeXT stands a much better chance of achieving long-term success if it spends the next year rebuilding its tarnished credibility and demonstrating the superiority of its object technology in one mainstream market. By that time, the competition will be hyping objects as if they invented them, and NeXT's proven leadership will be its most valuable asset.

GREGORY H. ANDERSON *is president of Anderson Financial Systems, a Springhouse, Pennsylvania-based developer of custom Wall Street trading applications. He can be reached at greg@afs.com.*



TEN MOST WANTED

With ramp-up after Expo slower than expected, attention shifted to immediate concerns of moving units while long-term wishes moved lower. Nevertheless, NEXTSTEP 4.0 is getting mindshare. Nothing in the bag this time. Thanks to Karsten Wolf for an especially thoughtful submission.

RANK	LAST ISSUE	ISSUES ON LIST	ITEM	COMMENT
1	1	2	Drivers, drivers, drivers	Soon, soon, soon
2	–	1	Direct sales results	Close 'em
3	3	2	Expanded indirect channel	Get leverage
4	–	1	PDOs everywhere	Ship on schedule
5	4	7	NeXT management stability	Weiss settling in
6	5	8	Expanded marketing message	Define OOP benefits
7	7	3	Aggressive IHV marketing	Slow start
8	–	1	Cross-platform apps	Lotus, Frame, Adobe
9	2	3	Improved corporate PR	Recent favorable press
10	–	1	NEXTSTEP 4.0 feature set	Not too soon

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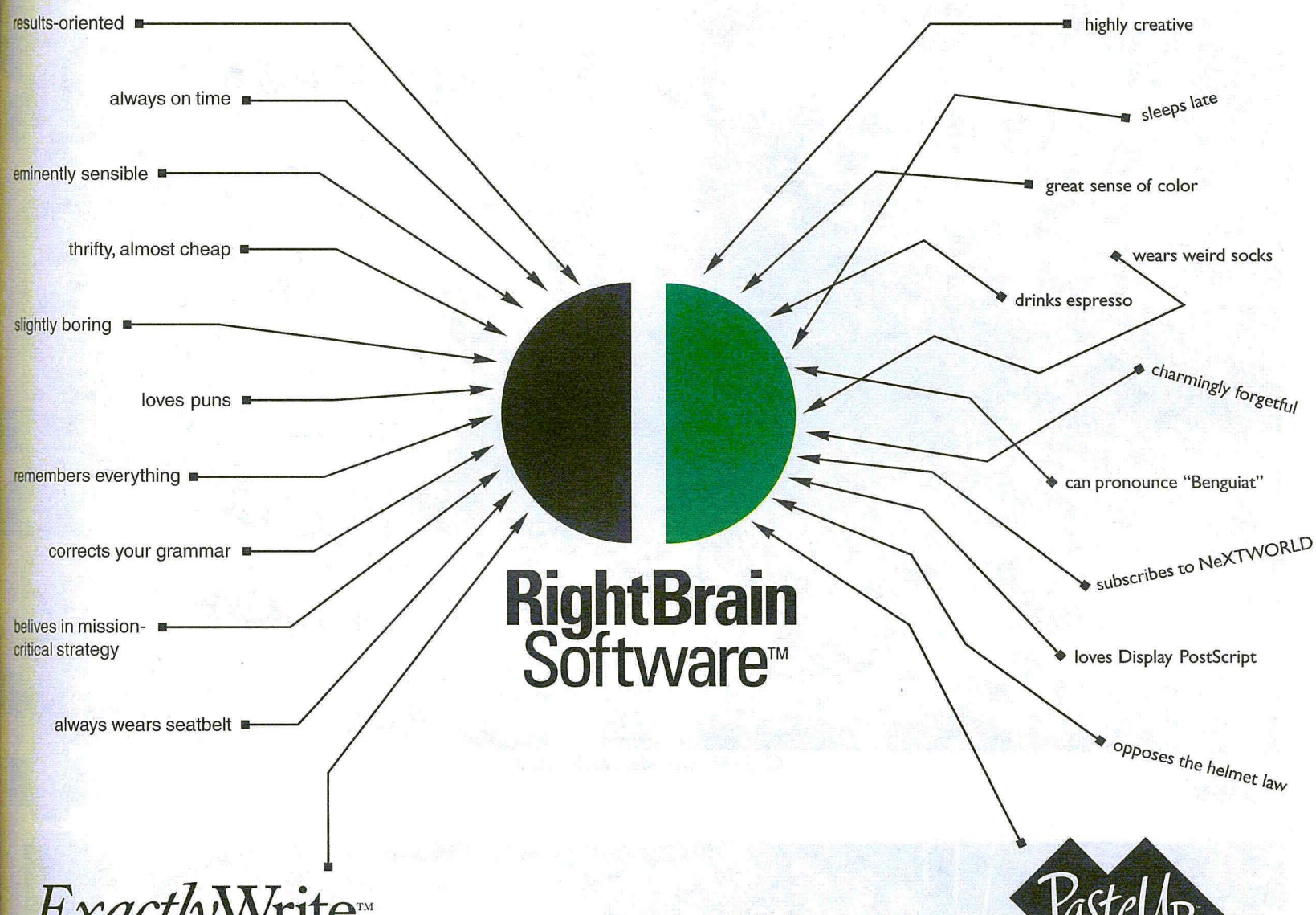

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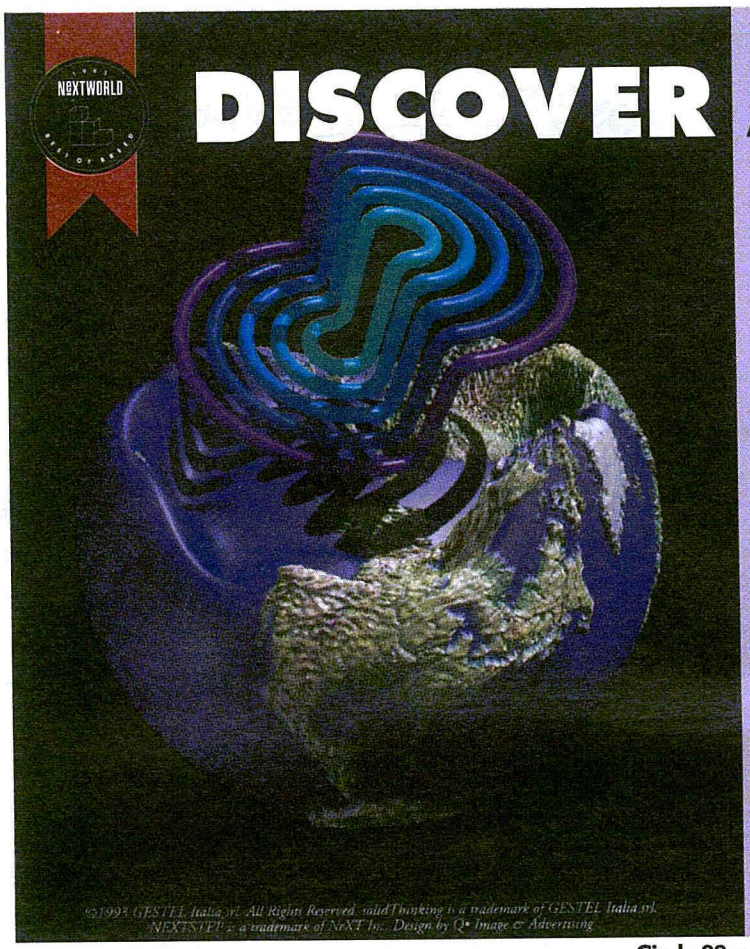

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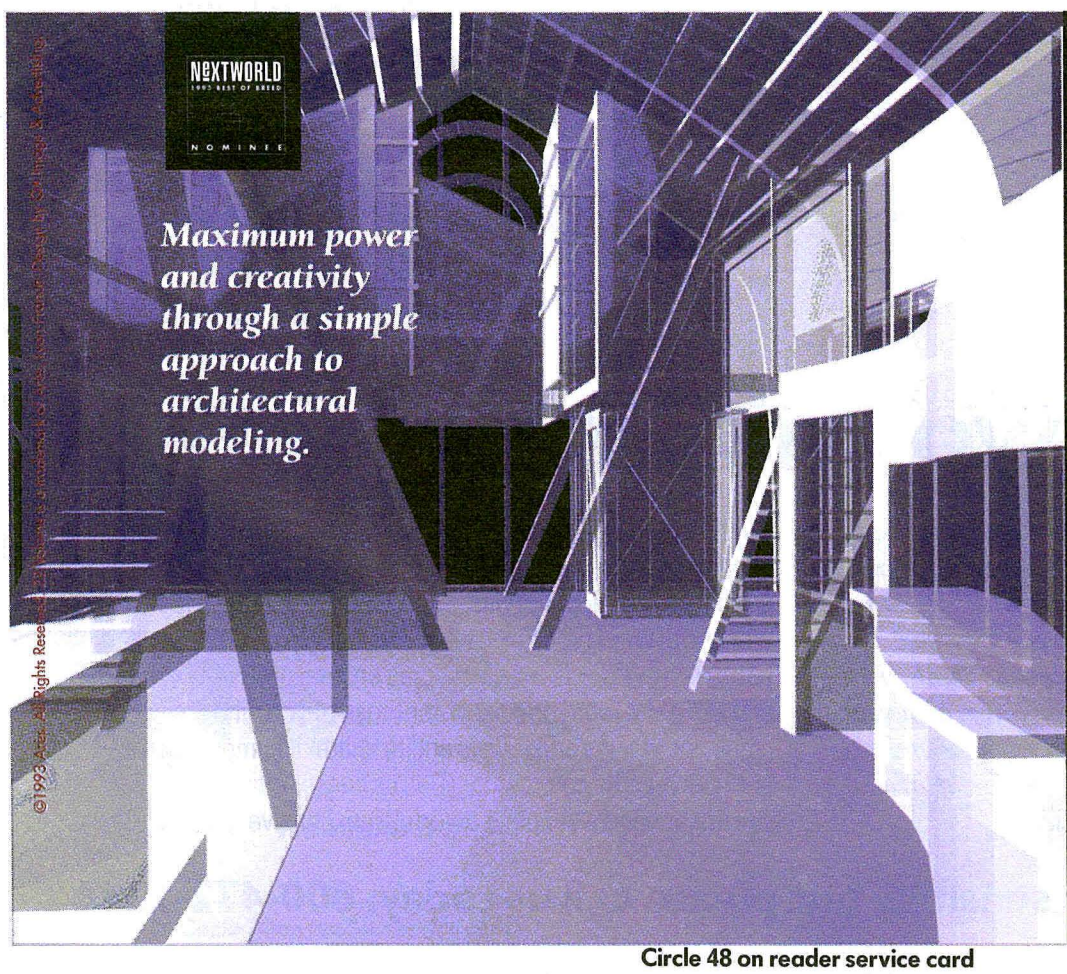

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NeXTWORLD

NEWS IN BRIE

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Perennial Software is shippin the Perennial Document Libra an (PDL), a document-manag ment program built on NEX STEP's Indexing Kit. The $8 software features a storage library for organizing, accessin and tracking documents such as spreadsheets, text files, sour files, and images. Users are aut matically notified of docume revisions by e-mail. Perennia Software: 415/681-9944.

MIDIapolis Systems has chang its name to Ciusa (Creative Imagineering America). Cius will still compete in the MIDI sound, and music markets, a will focus on NEXTSTEP appl cations; upgrades and fat-bin ry versions of Ciusa products were scheduled to ship in Jul DateWise 2.01, the fat-binary version of Ciusa's calendarin app, was scheduled to have shipped on July 30. Ciusa: 61 822-1604.

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NEXTWORLD EXTRA SEPTEMBER 1993

NEWS IN BRIEF

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Perennial Software is shipping the Perennial Document Librarian (PDL), a document-management program built on NEXTSTEP's Indexing Kit. The $895 software features a storage library for organizing, accessing, and tracking documents such as spreadsheets, text files, sound files, and images. Users are automatically notified of document revisions by e-mail. Perennial Software: 415/681-9944.

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Xanthus International has started beta testing of two new products: ServiceBuilder, an application for developing NEXTSTEP services using its scripting language; and DialogBuilder, an application for developing alert panels [CONTINUED ON PAGE 16]

NeXT extends eval kit offer

by CONNIE GUGLIELMO

Redwood City – Citing a strong initial response to its NEXTSTEP Evaluation Kit offer, NeXT extended the $299 promotion through the end of September and launched an extensive direct-mail campaign to further stimulate sales.

Although NeXT declined to give specific sales figures, spokeswoman Karen Logsdon said the response to the offer has been "tremendous. We're very pleased." The extension will further encourage users to "experience the benefits of building client-server applications using NEXTSTEP's [SEE EVAL KIT, PAGE 16]

NeXT stop: The Big Apple

by SIMSON L. GARFINKEL

New York – With back-to-back performances at two important New York trade shows, NEXTSTEP 3.1 made its debut in the Big Apple this June.

At the Securities Industry Association's (SIA) annual Information Management Conference and Exhibit, NeXT's booth drew a running crowd of prospective customers from the financial-services market. Meanwhile, at New York's mammoth Jacob Javits Convention Center, NEXTSTEP got its first introduction to the mass-market world of personal computers at this year's PC Expo.

Attendees at the SIA show were generally enthusiastic about NEXTSTEP. "I would like to get one in my shop once the dust settles – we're in the middle of a merger," said Jonah Giacalone, a systems architect with Chemical Bank in New York. Like most of the visitors to NeXT's SIA booth, Giacalone said: "I've read a lot about it, but this is the first time I'm actually seeing it."

In June, NeXT took the A train – and the D train too – to the center of the financial universe.

But others were skeptical that they would be able to adopt NEXTSTEP in their firms. "We're trying to comply with an open-standards environment. How do I do that with NEXTSTEP?" said Arkady Krutkovich, a programmer with Prudential Securities, who nevertheless said he was considering purchasing a copy of NEXTSTEP for his personal use.

In a market dominated by systems running on DOS, Windows, and Sun workstations, NEXTSTEP's main [SEE PC EXPO, PAGE 16]

Easier setup on tap for 3.2

by SIMSON L. GARFINKEL

Overcoming one of the primary stumbling blocks to white hardware, NEXTSTEP 3.2 promises to be dramatically easier to install on a wide variety of Intel-based systems. The new version, due out this fall, also includes support for DOS and Windows applications, an improved set of device drivers, and expanded on-line help.

"The main focus of 3.2 is quality," said Eric Chu, product manager for NEXTSTEP 3.2. "Release 3.1 was our first release on the Intel platform. We did everything to make sure that it was at the highest quality possible. However, it's like the first release of anything on a new platform – we missed some things."

Users of NEXTSTEP 3.1 have reported a variety of problems with drivers for Intel hardware, including serial drivers that cause the system to crash, echoes with the Pro Audio sound-interface board, and intermittent problems with Ethernet-interface cards. All of these issues have been addressed in NEXTSTEP 3.2, Chu said.

Other 3.2 highlights include:

- Support for Insignia Solutions' popular SoftPC program;
- An easier installation procedure, rewritten to take advantage of the NEXTSTEP graphical user interface;
- The ability to install NEXTSTEP on a computer over the network, using only a special boot floppy and a network installation server;
- An improved Driver Kit, which third parties will be able to use to [SEE 3.2, PAGE 16]

DRIVER WATCH

While NeXT shipped NEXTSTEP 3.1 with only a few device drivers, the company has been busy writing new drivers to support the wide array of hardware available in the PC marketplace. NeXT plans to distribute drivers as user-installable packages through its support channels and over the Internet.

In this new feature, *NeXTWORLD Extra* will monitor advances in the NEXTSTEP driver universe.

– SIMSON L. GARFINKEL

Video
NeXT is now distributing a new video driver for Epson's NX computer, which allows full-screen resolution at 16-bit color.

NeXT has updated its S3 driver to support the 928 graphics-interface board and IBM's PS/2 Value Point machines.

Serial
NeXT has finished and is now testing a new serial driver, which should eliminate system crashes caused when NEXTSTEP communicates with high-speed modems or other serial devices.

Sound
Drivers for Intel GX Professional's on-board 16-bit sound and Compaq's Pro Audio board are expected to be included in NEXTSTEP 3.2.

NS strategy differs for Epson, NEC

by DAN RUBY

Two of the leading NEXTSTEP OEMs made strides last month, as Epson America shipped a new system "built from the ground up for NEXTSTEP" while NEC Technologies showed off a black-painted Pentium "fantasy" machine.

The new Epson NX, featuring Wingine graphics at native NeXT resolution, replaces the Epson Progression as the company's preferred NEXTSTEP offering. It is available in configurations for users (20MB RAM, 240MB disk, $4199) and developers (36MB RAM, 525MB disk, $5799). The ISA-bus system includes Ethernet, SCSI, and sound and comes pre-loaded with NEXTSTEP.

A special video driver supplied with the system produces 16-bit color at 1182-by-832 resolution. Previously, only Dell's JAWS graphics subsystem could display NEXTSTEP at native resolution.

"We designed the system to look and feel [SEE PCS, PAGE 16]

PRODUCTS

DTP thrives despite shift

by Rick Reynolds

San Francisco – Despite the change in NeXT's marketing strategy away from desktop publishing, NeXTWORLD Expo saw a rush of new or updated DTP tools from a wide range of third parties. NeXT got into the game as well by announcing its support of Kodak Photo CD for NEXTSTEP, a move that could lead to Photo CD capabilities being included in publishing products in the near future.

Demonstrators' products addressed a variety of publishing needs. Ohio-based Here introduced Here's Color, a full-featured color-management system, and its companion Here's Color CRD, a color-rendering dictionary for device calibration.

Talus Imaging and Communications Corporation showed LeafLink, MatchMaster, and Retina, respective interfaces to the LeafScan 35 and 45 Color Slide Scanners, SuperMatch ProofPositive dye-sublimation printer, and Iris Color Proofing System.

Tailor offers graphical and code-based PostScript-editing functions.

GS Corporation (formerly Goldleaf Systems) announced new versions of eXTRASCAN and eXTRAPRINT specifically for the Canon CJ-10 desktop color copier. Altsys announced Version 2.0 of Virtuoso, its professional drawing package. Pinnacle Research drew a lot of people to its booth with its WetPaint color-painting program.

A German software company, tms GmbH, gave attendees an early look at its comprehensive publishing environment, which includes modules for image-editing, vector graphics, and page layout. The 1VISION system has a modular foundation that accepts small utility elements through major application-sized modules.

On the other side of the size spectrum, Belgium-based Technical Management showed Tailor, a small PostScript-file interpretation and manipulation utility. The program is designed to open PostScript files and modify elements within the code.

SSS makes a strong case for ObjectWare

by Connie Guglielmo

Meriden, CT – Software Services and Solutions is building its case for NEXTSTEP.

DRCS is a $195 CASE tool that offers tracking and revision control for directories and files. DRCS directory archives maintain a history of their previous contents, even if files have been renamed or deleted.

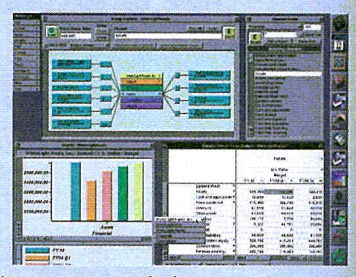
CodeReviewer is a $495 CASE tool that lets users track and manage changes to objects and other code in multiperson development efforts. Code can be analyzed visually or according to industry-standard software metrics.

The company is shipping three ObjectWare palettes: The $395 SSSInputFieldPalette ensures that keyboard input has an acceptable format; the $145 SSSMultiViewPalette panel manager; and the $395 SSSBarGraphViewPalette, which gives users access to graphical renderings of schedules, process-life graphics, and time lines.

Software Services and Solutions: 203/630-2000. rlm@sss.com.

WhiteLight gets brighter

by Eliot Bergson



The virtual corporation takes real shape with WhiteLight's business-modeling system.

Palo Alto, CA – Organizations that write mission-critical custom apps can now model their own business operations along an object-oriented paradigm.

WhiteLight/Engineer 1.1 from WhiteLight Systems allows managers and staff to build a shared model of the organization from a common library of business objects. The resulting business model can show changes in the firm's structure as they occur.

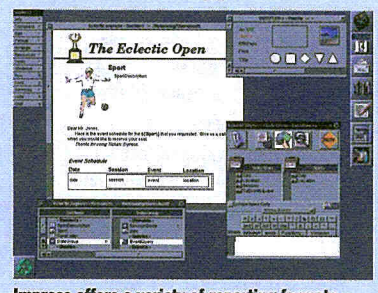
Applications built on the business-model objects enable personnel to access and manipulate information, in a variety of formats, for their function or department. The common object-oriented structure is designed to ensure accuracy and consistency in storing and updating the information.

The new release features updated functionality, including object linking, scripting, and savable workspaces. It runs on black and white hardware and sells by contract starting at $29,995, which includes training and two developer and five end-user seats.

WhiteLight Systems: 415/321-2183.

OTI seeks to Impress

by Clair Whitmer



Impress offers a variety of reporting formats.

San Francisco – Objective Technologies premiered at NeXTWORLD Expo its report-writing software Impress, which allows relational-database users to present information in a range of formats.

Working with DBKit-compatible data, Impress features graphical-layout tools and point-and-click SQL-query creation. Mathematical calculations can be programmed with an object-oriented scripting language. Its report-generation functions include headers, footers, and sidebars.

The program supports hierarchical, conditional, and flat sets of data, as well as queries, and includes an extensible API that allows Impress to be used as a report engine in custom applications.

Scheduled for beta release this fall, Impress is expected to sell for $850. Objective Technologies: 212/227-6767.

Smart OCR scans alone

Portland, OR – Insight Software has released ElectroWorX OCR for NEXTSTEP, an optical-character-recognition system based on the Xerox ScanWorX API developed originally for Sun workstations and the IBM RS/6000.

ElectroWorX is designed for a high-volume environment where it can run unsupervised for hours, converting scanned image files into text files.

The company claims the program can read "dirty" documents, remembering corrections for a document and applying them each time the character reappears.

A single user license costs $1295. Insight Software: 503/222-2425.

Dev tool

Sunnyvale, CA – NeXT has signed an agreement for a port of TeamTools, TeamOne Systems' object-oriented configuration-management software that has been running on Sun and HP machines for several years, to run under NEXTSTEP for Intel.

TeamTools allows software developers to manage and control versions, releases, and the workflow of applications through their entire life cycle. It consists of TeamNet, distributed configuration-management software; TeamView, a real-time graphical browser to view data tracked by TeamNet; and TeamMake, which integrates GNU Make and Custom technology into TeamNet.

TeamOne Systems: 408/730-3500.

New backup security

Pittsburgh – Business users who are especially security-conscious or just lax in performing backups will welcome the release of Network Backup Manager from Teledia.

The software's server module automatically performs backups of all hard drives on remote workstations via TCP/IP and establishes a database of all volumes on various media: cartridge, optical disk, DAT, and 4mm and 8mm tape. Users can access a directory of storage volumes. The server module also reads disk capacities to maximize storage efficiency.

Network Backup Manager has been tapped as the backup solution at the Brussels (Belgium) Airport Terminal Company. The software's object-oriented structure will allow the airport to maintain secure archives of records from a variety of UNIX platforms, according to the company.

Teledia: 412/321-5850.

Accounting suite ships

Chanhassen, MN – Counting on business from anything from guy-in-a-garage shops to large networked offices, Sumeris Technology is shipping its QuantaFlow accounting package for NeXT and Intel platforms.

The software includes general and subsidiary ledgers for an unlimited number of accounts, accounts receivable and accounts payable, periodic and year-end financial reports, hierarchical account charts, and a report-generating module.

QuantaFlow sells for $995 for the first user and $199 for each additional user.

Sumeris Technology: 612/474-6505.

Health ma

by Connie Guglielmo

San Francisco – President Clin ton and his administratio aren't the only ones makin health care a priority.

Four months after NeX CEO Steve Jobs delivered th keynote address at a majo health-care gathering – th HIMSS Conference and Exhibi tion – NeXT sponsored for the ond year a one-day health-c developers' symposium, whi drew representatives from m than 45 developers and health- organizations eager to exami NEXTSTEP's status in the hea care marketplace.

Held at NeXTWORLD Ex the symposium was designed "build a community focused health-care solutions within NeXT developer community," Ken Rosen, NeXT's manager emerging markets. "Health ca one of our two major focuse along with financial services. Tod you actually have vendors who able to sell solutions and hospit using NEXTSTEP technology.

Health-care customers wit NeXT technology up and runn include Mt. Clements General H

ProNeXT

by Eliot Bergson

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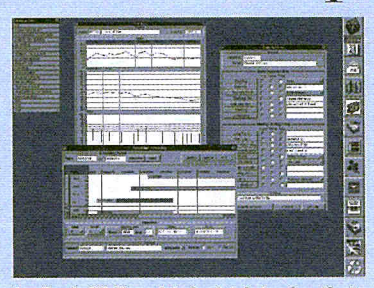
Health market check-up

by Connie Guglielmo



Logibec's Clinibase lets hosiptals track patient information.

San Francisco – President Clinton and his administration aren't the only ones making health care a priority.

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Held at NeXTWORLD Expo, the symposium was designed to "build a community focused on health-care solutions within the NeXT developer community," said Ken Rosen, NeXT's manager of emerging markets. "Health care is one of our two major focuses, along with financial services. Today, you actually have vendors who are able to sell solutions and hospitals using NEXTSTEP technology."

Health-care customers with NeXT technology up and running include Mt. Clements General Hospital in Detroit and the Alberta Children's Hospital in Calgary, which is using Montreal-based Logibec Groupe Informatique's Clinibase 2000 application. The Arkansas Children's Hospital is also preparing to make an investment in NeXT, Rosen said.

NeXT developers were enthusiastic about both NeXT's and customer interest in this emerging market. "I was surprised to see the level of support in the health-care community for NEXTSTEP," said Alex Cone, founder and president of New York-based Objective Technologies and one of the symposium speakers. "We've spent a lot of time in the financial community and we're used to people who make thousand-unit commitments. It's nice to see another area with this kind of interest."

ProNeXT wants SoftPC

by Eliot Bergson

Redwood City – ProNeXT, the loose alliance of corporate users, added several new members and reviewed with NeXT marketing developments at its July 8–9 meetings here.

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The group also discussed new technical developments, the 3.2 shipping schedule, updates about its new Object•Enterprise comarketing strategy with HP, and the success of the NEXTSTEP Evaluation Kit. Hard numbers are not in yet from the promotion, a source said, but the qualitative evidence was encouraging. ProNeXT members voiced support for NeXT's new marketing initiatives and in-house public-relations strategy.

COSE specs

HP, IBM, SunSoft, and UNIX Systems Laboratories have submitted their first set of specifications for the common open software environment (COSE) desktop to the X/Open standards organization.

The specifications define both elements of a graphical user interface – including a standard font panel, mail application, calendar, and text editor – as well as a standard cross-platform API.

NEXTSTEP will interoperate with future COSE-based systems via industry standards such as CORBA and DCE, said Rick Jackson, NeXT's director of developer environment product marketing.

BUSINESS

The world according to Weiss

by Dan Ruby

Redwood City – The revamping of NeXT's North American sales and marketing organization began last month as new Vice President Warren Weiss consolidated marketing functions and began new sales initiatives.

Product marketing, which had previously been separated from other marketing operations, will now report to Weiss. In the shift, Brett Bachman, formerly the director of product marketing, resigned and was replaced by codirectors Margaret Chan and Rick Jackson.

In July, the marketing department, which also includes corporate marketing under Ron Weissman and marketing communications under Karen Steele, launched a new series of NEXTSTEP seminars with an event in New York. The road show will make stops in major cities throughout the country (see box).

On the sales side, there were new initiatives involving both direct and indirect sales. Vice President of Direct Sales William Wesemann is creating a telesales department responsible for outbound selling in support of each of the four North American sales regions. The unit will target sales of less than $50,000.

Indirect sales will be boosted with a new four-member team focused on midsize system integrators, a market projected to provide ten percent of NeXT's revenue in 1994. Existing groups under David Wertheimer and Richard Marquez are responsible for OEM and VAR sales. The department also covers software distributors and resellers. District sales managers will continue to handle high-end integrators and VARs.

The two new sales units are designed to "get customer service out on the street," Weiss said.

Eventually, Weiss expects to hire heads of marketing and indirect sales to complement Wesemann as vice-president of direct sales. For now, Weiss is acting in those roles.

NEXTSTEP on the road

NeXT will bring its new NEXTSTEP seminar to the following cities in the coming months. The full-day program includes a technical-evaluator seminar and breakout sessions for VARs, system integrators, and software developers. For dates and locations, call 800/TRY-NeXT.

August	September
Los Angeles	Dallas
San Francisco	Washington, DC
Chicago	

Simon Says finds new voice with Metrosoft

by David Grenell

San Diego, CA – Simon Says will be taking orders from a new master. Metrosoft announced in July that it has purchased the voice-recognition software, whose ownership reverted to original developer Greg Cockroft of Agog when HSD Microcomputer US failed to sell enough copies to fulfill contractual obligations.

A hit at NeXTWORLD Expo '92, Simon Says allows users to control any NEXTSTEP app by voice in real time. Users can train the software to recognize voice-activated commands regardless of accent, dialect, or language.

Metrosoft is set to offer Version 2.0, which features an improved user interface and functionality for both black and white hardware, for $295 in October. Until then, Metrosoft is offering an intermediate upgrade that is free with a pre-order of the new version.

Metrosoft: 619/488-9411.

New CFO

Redwood City – Dominique Trempont joined NeXT in August as chief financial officer and vice-president of administration. The Belgian native comes from Raychem, where he ended his 13-year tenure as director of finance and business development of the company's $450 million electronics division. He was a member of the Belgian Olympic equestrian team.

CHANNEL SLEUTH

1-800-SURPRISE

Buying a PC with NEXTSTEP preinstalled on the hard drive should be as simple as calling an 800 number and placing an order. But in the channel, as your sleuth discovered, PC vendors are just getting up to speed.

Although NEC's sleek Versa notebook and Express desktops were hits at NeXTWORLD Expo, the company had yet to determine final pricing and configurations. The operator offered to put me on a mailing list and recommended faxing NEC's fax-back system for latest information.

Data General and Epson were ready to sell fully configured systems, but our calls met with mixed results. Epson's order-taker said that the company's Progression PCs include a "beta demo" of NEXTSTEP, referring me to Ingram-Micro for the real thing. In fact, the Progression is not Epson's current NEXTSTEP box and NEXTSTEP comes preloaded. DG's competent salesperson outlined a wide range of NEXTSTEP options from entry-level desktops to server-class systems.

In keeping with the company's reputation for direct marketing excellence, the Dell salesperson was well informed, prepared to answer any question, and ready to deal. Unfortunately, Dell is not yet putting NEXTSTEP on its hard drives. You must purchase a CD-ROM drive in order to install it. Only two drives are officially supported: one from Toshiba and one from NEC.

Each month, the Channel Sleuth will look at a different aspect of NEXTSTEP distribution. NEC: 800/632-4636; 800/366-0476 (fax-back); Epson: 800/922-8911; Dell: 800/289-3355; DG Direct: 800/343-8842.

BRIEFS Continued

and forms to be used in other Xanthus applications with a scripting language (currently Questor, Celebro, and ServiceBuilder). Both apps require the final release of NEXTSTEP 3.1. Xanthus: 46/8/612-8995.

Cable TV!, NEXTSTEP cable-distribution-management software from Le Mans, France-based Assistance Ingenierie Informatique, was chosen by *Decision Micro* magazine as one of the ten best applications developed in France in 1992. The app, designed to organize, manage, and maintain information flow in large organizations, is fully customizable for a variety of customer bases. AII: 33/43/23.66.43.

Conextions is offering enhanced versions of its 3270Vision and 5250Vision terminal emulators on NEXTSTEP-for-Intel systems. The $595 software provides IBM connectivity via SNA and TCP/IP networks and includes a graphical keyboard editor, batch-job inspection capabilities, and unattended batch-file transfer. Conextions: 508/689-3570.

Aurora Software released in July LoadEye 1.1, software for monitoring system usage. The $49 app displays updated histograms of system loads of networks with both black and white hardware. It is available directly from Aurora Software, as well as various NeXT distributors, VARs, and dealers. Aurora Software: 608/231-3679.

Black & White Software has reduced the price on all modems and modem packages. B&W's NXFax software, with a ZyXEL U-1496E modem and cable, is priced at $500, down from the original price of $600. NXFax alone remains at $135. Black & White Software: 802/496-8500.

NeXTWORLD Extra **is a regular section of *NeXTWORLD* magazine. It is published monthly by Integrated Media, a subsidiary of IDG Communications, 501 Second St., San Francisco, CA 94107, Lt. Sullivan's column and articles about unannounced NeXT products are reported and written by contributors without guidance from the *NeXTWORLD* staff.**

Editor: Dan Ruby; Managing Editor: Eliot Bergson; News Editor: Dan Lavin; Technical Editor: Simson L. Garfinkel; Layout Chief: Beth Kamoroff

PC Expo [FROM PAGE 13]

chance of penetration seems to be new applications that are currently in planning or the early stages of development, said Maryann Hays, a lead design analyst with the Securities Industry Automation Corporation.

Although NeXT did not have a formal presence at PC Expo, NEXTSTEP could be found in the booths of most of NeXT's new business partners, including NEC, Dell, DEC, Advanced Logic Research (ALR), and Epson. Many of the computers were demonstrated by volunteers from New York's Gotham NeXT Users Group, who explained the advantages of the object-oriented operating system to curious onlookers.

In NEC's booth, NEXTSTEP was featured on one of the fastest Intel-based computers present at the show: an Express/II Pentium-based system that NEC billed as a "fantasy" system (see story, page 1).

Two Epson Progressions running NEXTSTEP attracted the attention of Joseph C. Trubisz, a researcher at State University of New York at Stoneybrook. "I want one personally," said Trubisz, who added that the the university was considering the purchase of 25 machines for a research lab.

PCs [FROM PAGE 13]

as much as possible like NeXT's black box," said Steve Huey, vice president of product management. The Epson NX began shipping to customers in July.

Meanwhile, NEC featured NEXTSTEP in its first showing of its Express/II Pentium ST at PC Expo in June. The unit, which included a PCI graphics subsystem and black finish, is not a shipping product. It was showcased in order to gain market feedback, according to Paul Reed, manager of product marketing.

He said that users responded warmly to the design. The paint job was an attention getter, but not necessarily a selling point for corporate buyers, Reed added.

Rather than market a special product for NEXTSTEP, NEC's strategy is to make all its Express/II models NEXTSTEP capable, Reed said. NEC's shipping Express/II line features a 256KB CPU cache, local-bus graphics, and integrated SCSI controller on the motherboard.

Eval Kit [FROM PAGE 13]

object-oriented technology first-hand," she said.

Originally slated to be available only until July 31, the kit contains full implementations of both the user and developer versions of NEXTSTEP 3.1 for Intel, complete with user documentation and a developer CD-ROM with reusable objects and visual application-construction tools. A coupon to purchase developer technical documentation for $133.50, about 50 percent off the retail price, is also included.

The Evaluation Kit does not include free upgrades to Release 3.2 for Intel, which will ship sometime in the fall. To upgrade, users must purchase the regularly priced versions, which are $795 for the user version and $1995 for the developer version. The offer is limited to one copy per customer.

NeXT's promotion on the Evaluation Kit, which also includes a book on NEXTSTEP programming, a video, and a disk with sample software, was extended in order to provide more users the opportunity to try the Intel version.

In July, NeXT began a direct-mail campaign in support of the promotion. Mailings went out to 125,000 target customers, including a customer list supplied by software distributor Ingram.

The kit is available from NeXT by calling 800/TRY-NeXT.

3.2 [FROM PAGE 13]

write drivers for sound boards and boot devices;

• On-line help for Configure, PrintManager, and Edit's "developer mode."

NeXT will also make Version 3.2 available for black hardware. Both versions are slated to ship "sometime this fall," Chu said.

Also expected in Q4 is NeXT's Portable Distributed Object (PDO) environment for Hewlett-Packard's HP-UX operating system. According to Rick Johnson, NeXT's director of development environment product marketing, the PDO system includes a library that emulates the Mach Interprocess Communication System using UNIX sockets, the Objective-C run-time system, and support for NeXT's distributed objects.

NeXT has also embarked on a port of PDO to SunSoft's Solaris operating system, which "will probably follow the HP port by 60 days," Johnson said.

Down in the dumps with Lt. Sullivan

Dumpster diving is a time-honored tradition in Silicon Valley. While Lt. Sullivan prefers to do his data collection in person, his operatives have been known to find a lot of interesting information (and surprisingly valuable scrap) in the trash bins on Chesapeake Drive and elsewhere in the Valley.

Just ask Bob Kaiser of Essential Elements. This spring, Bob's tour of certain Redwood City dumpsters netted $10,000 worth of NeXTstation memory modules concealed in file folders at the bottom of the trash. And as long as the bin is on public property, it's all perfectly legal. Finders keepers.

Apple's dumpsters in Cupertino have long been a mecca for connoisseurs of secret documents. That's where one Sullivan informant hit on a treasure trove this month. One amazing find was a draft of an agreement with a company called Quix Computerware of Lucerne, Switzerland, to sanction sales of Macintosh LC ROMs for converting NeXTstations to run the Mac OS. It appears that Quix plans to market a product called Daydream, a small white box that connects to your DSP port and loads System 7.1 and Apple's ROM secrets into your NeXTstation RAM. Your performance is completely native, comparable to a Macintosh Quadra 900 or 950 (depending on your model of NeXT). It is compatible with all Macintosh software.

Amazing as it sounds, the ROMs are licensed from Apple. According to the documents, Quix plans to sell the box for less than $1000, though there is no indication of where or when the product will be available. Maybe this is what Steve means when he talks about only one computer on every desk.

Lt. Sullivan

Even more interesting was the crumpled memo discussing the future of Taligent in light of the cutbacks at Apple. It refers to the company's need to raise outside funding and discusses some contingencies if the Pink project goes belly up. One alternative is an alliance with NeXT, which after all is already shipping what's on Taligent's drawing board. It is not so far-fetched, considering that new CEO Mike Spindler goes back to the Steve Jobs days at Apple. You might also note all the nice things Steve has been saying about Diesel Mike in the press.

Back in Redwood City, part of the old NeXT property at 600 Galveston will be the new corporate headquarters of 3DO Corporation. NeXT employees are already planning lunch-time trips across the street to check out the next generation in consumer-electronics game technology.

NeXT's revived board of directors, which includes Larry Ellison of Oracle and Dan Case of Hambrick & Quist in addition to Steve Jobs and a representative from Canon, has met twice since June. Top priority is reaching a solid business plan with realistic sales targets for 1994. Word is that the board is satisfied with the early '93 numbers, with NEXTSTEP sales in the first month after shipment running above expectations.

NeXT is considering plans for a January developer conference on the East Coast, a region that was underrepresented at last spring's NeXTWORLD Expo. The timing coincides with the schedule for NEXTSTEP 4.0 feature freeze, whereupon 4.0-savvy briefings can begin in earnest. While that sounds hopeful, don't expect to see a shipping 4.0 before calendar year 1995, when we can expect a triple-architecture (NeXT, Intel, and HP PA-RISC) release. Would that be called "really fat?" How about "obese?"

The legal market, once considered a prime target for NEXTSTEP, has been moving backwards recently. Big plans at the USWest corporate counsel's office have been scaled back from the planned 275 seats to the already-installed 50 to 60 machines. Windows NT will be the strategic platform. In Tulsa, Conner & Winters also dropped NeXT in favor of Windows.

Not all the news comes from dumpsters. Tuning in to MTV to keep up with the youth culture, Sullivan discovered at last where all the extra NeXTstations went. It wasn't the government boys after all but pop icon Madonna, who snatched up the hardware for her "Rain" video. A whole bank of stations is prominently featured in the high-concept spots – each and every one running NEXTSTEP in Kanji.

Speaking of unexpected finds, one recent visitor to the offices of Athena Design, makers of the Mesa spreadsheet, saw an old-fashioned medicine bottle filled with a beautiful blue liquid and labeled "Appsoft Solution." Whatever liquid you prefer, it tastes best in a Lt. Sullivan coffee mug – yours in exchange for industry secrets. Contact Sullivan at 415/978-3374 or send e-mail to sullivan@nextworld.com. (RSA Public Key: U1ggACA+iDAH3mBEb/bPAbScVQM-RfPeDZWpnZKRB2A3+MLgqf8uXPbanDc0oJm/3urv5w/zcWO4K7uM2J aUf7WHY1KUc3YcaOK5EAjq5HG4vZKg+hoch2JZo1AoaRzF1DLyRbFv9 6OO6Z2ya0umTLakBMy8NQJdiOg8Ife+3ia8aEuSOufX/0AAwEAAQ==)

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it is available from NeXT
g 800/TRY-NeXT.

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of development environ-
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nication System using
ockets, the Objective-C
system, and support for
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," Johnson said.

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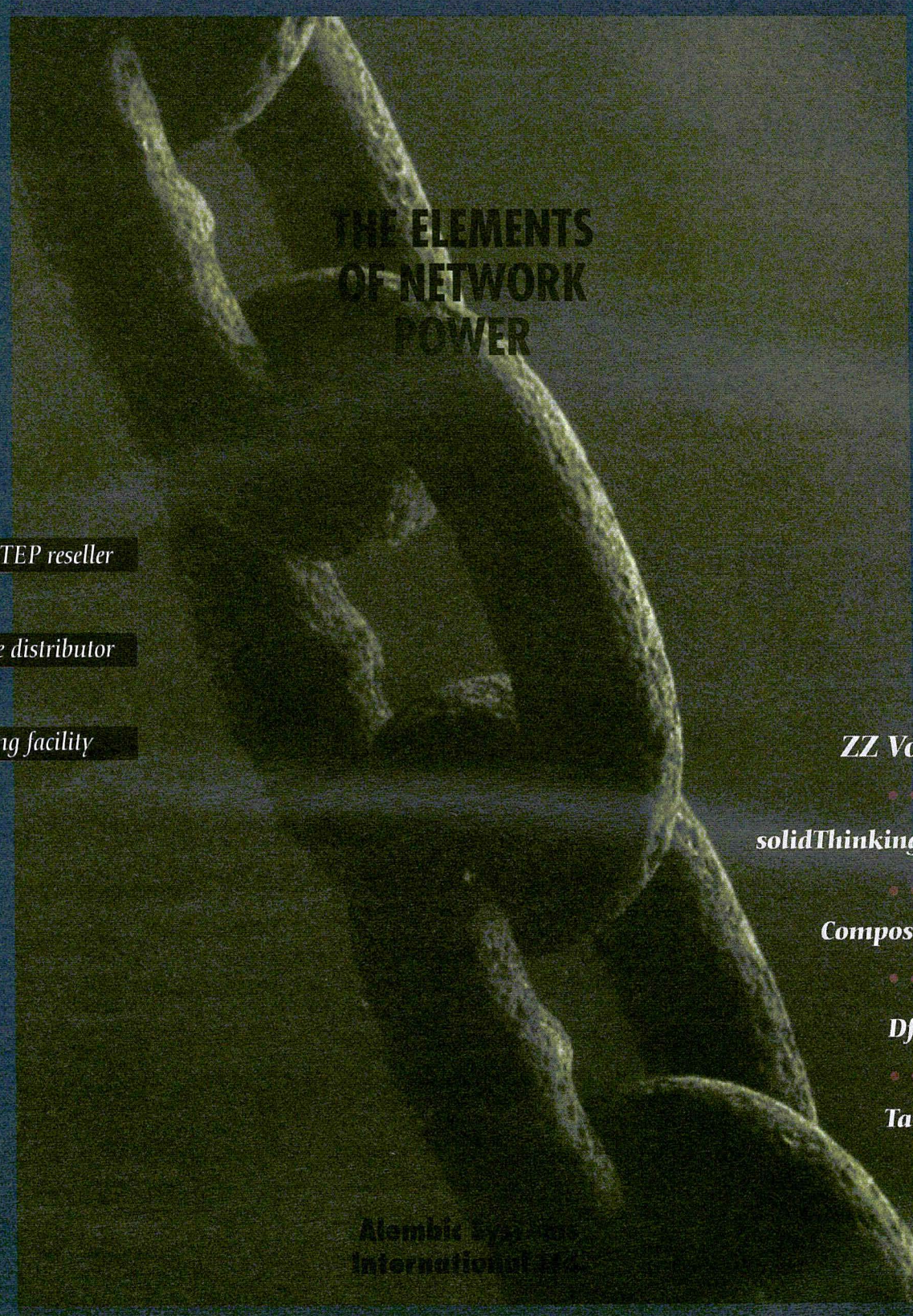

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ComposeInColor is a professional color image processing package with database and scripting features designed for pre-press bureaus and advanced graphic designers. Combined with the BlackBox it runs at a supercomputer power of 100 MFlops. **Dfax** is a fax/modem application for Supra, HSD, Zyxel, and Mistral faxmodems. It is designed for transparent and large amounts of high speed fax and data transmissions. **Tailor** is a graphical PostScript editor that allows users to open and modify any single-page 'unchangeable' PS or EPS files from any application/platform. It is the tool to make instant changes and move elements from one document to another.

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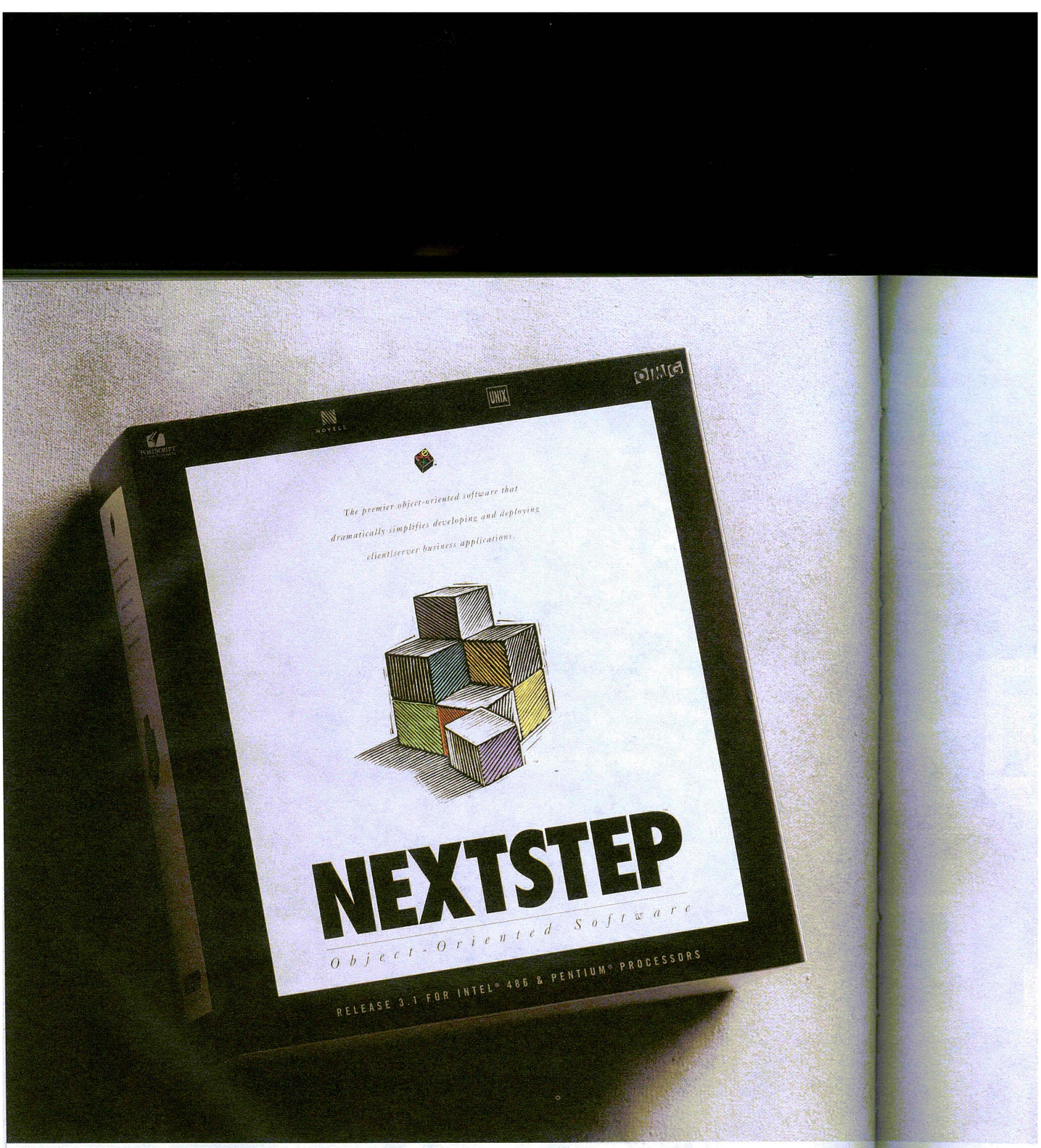

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Developer boxes

How They Stack Up

First *NeXTWORLD* benchmark results on 15 developer PCs

BY M CARLING AND SIMSON L. GARFINKEL

PHOTOGRAPHS BY DAVID M

When NeXT held that Ir Motorola s possible to on PCs from a wide rang

What's the real-wor NEXTSTEP? Which cor price range for a fully rig ponent integration? Wha NEXTSTEP users?

These are the questio decide which PC model t answers, *NeXTWORLD* developer systems listed i bility guide, as well as to listed but are targeting th

The first thing we lea PC suppliers are fully up suppliers responded to ou with both a '486- and Pe most were still uncertain a final configurations, chan Therefore, we are not yet product, complete with cu

Nevertheless, in putti able to reach important g first wave of developers fa

This article includes c form their own opinions. rated reviews of individua

To be included in this (those with more were lin MB or larger hard disk. C NEXTSTEP 3.1 and NEX process – and then ran our Blues"). Note that we incl systems from Advance 200 box from Compaq, could in the sidebar.

NEXTSTEP develope

Vendor
Advance 2000
Advanced Logic Research (ALR)
AST Computer
Compaq Computer Corporation
Compaq Computer Corporation
Continental Computer Corporation.
Data General Corporation
Digital Equipment Corporation
Dell Computer Corporation
eCesys
Epson America
Lucky Goldstar Int'l (America)
NCR Corporation
NEC Technologies
Pioneer Technologies Group

[1] *Formatted capacity* [2] *Pricing is* [3] *Integrated on motherboard* [4] N

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PHOTOGRAPHS BY DAVID MAGNUSSON

When NeXT quit the hardware business, common wisdom held that Intel machines would provide everything that Motorola systems provided – maybe more. Now that it is possible to run NEXTSTEP 3.1 and NEXTSTEP Developer on PCs from a wide range of makers, we can put that notion to the test.

What's the real-world performance of a '486 or Pentium PC running NEXTSTEP? Which components and subsystems work best? What's the price range for a fully rigged developer system? What is the level of component integration? What kind of support do PC vendors provide for NEXTSTEP users?

These are the questions that NEXTSTEP customers are asking as they decide which PC model to adopt as a development platform. To get the answers, *NeXTWORLD* put out the call for evaluation units of the 17 developer systems listed in the June release of NeXT's hardware-compatibility guide, as well as to several other manufacturers who are not yet listed but are targeting the NEXTSTEP market.

The first thing we learned is that few of the advertised NEXTSTEP PC suppliers are fully up to speed in servicing the market. While 14 PC suppliers responded to our request for test systems (Compaq provided us with both a '486- and Pentium-based computer, for a total of 15 systems), most were still uncertain about the level of their support for NEXTSTEP, final configurations, channels of distribution, and, in some cases, pricing. Therefore, we are not yet able to provide finished evaluations of each product, complete with cube ratings.

Nevertheless, in putting these systems through their paces, we were able to reach important general conclusions that should be helpful to the first wave of developers faced with choosing systems.

This article includes our benchmark results, which readers can use to form their own opinions. Beginning with the next issue, we will provide rated reviews of individual machines that are ready for prime time.

To be included in this review, systems had to have 32MB of RAM (those with more were limited to 32MB for the benchmarks) and a 340-MB or larger hard disk. Once the systems were in-house, we installed NEXTSTEP 3.1 and NEXTSTEP Developer on each – not always an easy process – and then ran our benchmarks (see the sidebar, "Installation Blues"). Note that we include benchmark results for only 12 systems. The systems from Advance 2000 and Digital Equipment, as well as the '486 box from Compaq, could not be tested reliably, for the reasons explained in the sidebar.

Real machines, real numbers

The mass-market PC world lives by two criteria: price and product differentiation. Cheap computers are almost indistinguishable; open any Sunday paper and you'll see dozens of companies trying to sell off-brand or no-name computers on price alone. Be prepared to spend a little more money and you'll soon find competition moving to the performance, expandability, and support areas.

While all these factors are important, the top priority for most developers is performance. Even with today's top-of-the-line systems, developers spend a lot of time waiting. Speed up the system, and the developer becomes more productive.

The performance of a NEXTSTEP machine is determined by a variety of factors, including the CPU type, graphics subsystem, hard-disk drive, disk controller, and expansion-bus design. Our tests look at the variability in each of these factors.

We did not test Ethernet performance, since it depends almost entirely on the computer's bus design and isn't critical to most NEXTSTEP developers, whose entire development systems are normally resident on the computer's hard disk. We also didn't look at support for sound or serial ports, since both are limited under NEXTSTEP 3.1.

Here's what we found:

CPU: With two exceptions, all of the machines we reviewed (see the chart "*NeXTWORLD* benchmarks") use Intel's i486 DX2/66 microprocessor, which runs at 66MHz and has an external-bus interface of 33MHz. Not surprisingly, the CPU performance among those PCs with DX2/66 processors varied by less than ten percent. This variance can be attributed to secondary RAM caches, which ranged from 0KB to 256KB, and to motherboard design.

The Compaq Deskpro 5/60M contains Intel's new Pentium processor. Running under NEXTSTEP, the Pentium chip made the Compaq about 50 percent faster than the '486-based systems we tested; however, other limitations prevented its real-world performance from improving correspondingly. Dell's 450DE/2 DGX, on the other hand, was equipped with a DX2/50, the slowest CPU of those tested.

We are intrigued by the performance claims for Advance 2000's 80MHz system, which pushes the external clock speed on a standard DX2/66 chip from 33MHz to 40MHz. Unfortunately, an installation problem prevented us from fully testing this prototype system.

As expected, all of the systems were faster on raw CPU performance than a NeXTstation Turbo Color, and the news on that score will only get better. By year-end, Intel is expected to release its clock-tripling chip, the DX3, which will sport an external speed of 33MHz and an internal speed

NEXTSTEP developer PC configurations

Vendor	System	Chip	Graphics subsystem	Slots	Storage[1]	Hard-disk drive adapter	Price[2]
Advance 2000	Ne486-LD/Prototype 80MHz	DX2/66	ATI EISA	2 EISA/VLB, 1EISA, 5 ISA	Micropolis 532MB	DPT 2012 (0MB cache)	$4989
Advanced Logic Research (ALR)	ALR Evolution IV 4E/66D	DX2/66	ATI VLB	4 EISA, 2 EISA/VLB	Maxtor 340MB	Adaptec 1740A[6]	$6189
AST Computer	Premmia 4/d	DX2/66	ATI LB	5 EISA	HP 540MB	Adaptec 1540B	$7360
Compaq Computer Corporation	Compaq Deskpro 5/60M	Pentium	QVision	5 EISA	Connor 486MB	IDE	$8569
Compaq Computer Corporation	Compaq Deskpro 66M	DX2/66	QVision	5 EISA	Connor 486MB	IDE	$6809
Continental Computer Corporation.	Continental System 4000 for NeXT	DX2/66	ATI VLB	6 EISA, 2 EISA/VLB	DEC 812MB	Bus Logic BT747	$5958
Data General Corporation	486 DX2/66 LE2	DX2/66	ATI EISA	4 EISA, 2 ISA, 1 LB	Fujitsu 496MB	DPT2012 (4.5MB cache)	$7500[4]
Digital Equipment Corporation	DEC PC 466D2 MTE	DX2/66	S3-805[3]	5 EISA, 1 EISA/VLB, 1 LB	DEC 234MB	IDE	$5769
Dell Computer Corporation	Dell 450DE/2 DGX	DX2/50	JAWS	5 EISA, 1 JAWS	Quantum 668MB	DPT 2012 (0.5MB cache)	$7428
eCesys	eCe466NX-IT01	DX2/66	Wingine	6 ISA, 1 VLB, 1 LB	Quantum 501MB	Adaptec 1542C	$5395
Epson America	Epson Progression NX	DX2/66	Wingine[3]	6 ISA	Quantum 496MB	Adaptec 1542B	$6448[4]
Lucky Goldstar Int'l (America)	Logisys 466NX/2	DX2/66	Wingine	6 ISA, 1 VLB, 1 LB	Seagate 500MB	Adaptec 1542C	$4792
NCR Corporation	NCR System 3333	DX2/66	ATI VLB	4 ISA, 2VLB	Connor 520MB	Adaptec 1540C	$4700[5]
NEC Technologies	Express/II 466ST	DX2/66	ET 4000[3]	8 EISA	Connor 520MB	DPT 2022[3]	$6013
Pioneer Technologies Group	Intel GX/Professional	DX2/66	ATI[3]	2 EISA, 1 ISA	Western Digital 325MB	IDE	$6000

[1] Formatted capacity [2] Pricing is manufacturer's estimate for a system that includes 32MB of RAM, 500MB (or larger) hard disk, a SCSI controller, and a 17-inch color monitor.
[3] Integrated on motherboard [4] NEXTSTEP 3.1 and Developer included [5] 15-inch monitor [6] No driver available; we tested the machine with a slower Adaptec 1540C.

Installation Blues

Installing NEXTSTEP on an Intel computer can be a trying experience. Every "industry-standard" PC is different, and NEXTSTEP's installation program isn't yet fully cognizant of the peculiarities. Before starting, therefore, be sure to read NeXT's release notes, to see if there are any special procedures that you need to follow for the computer or any of the add-on cards you might have.

We found NEXTSTEP easy to install on computers with the Adaptec 1542B and 1542C SCSI cards. We had a difficult time installing NEXTSTEP on systems equipped with DPT's 2012 SCSI interface, due to to numerous options in jumper settings, BIOS configurations, and EISA-configuration utility settings. We didn't have any problem with the NEC Express/II, which had DPT's newer 2022 controller integrated on the motherboard. Because we didn't have a 2022 card available, we were unable to determine whether this was due to integration or to improvements of the 2022 over the 2012.

We were unable to install NEXTSTEP 3.1 on the Advance 2000 (which arrived running a prerelease version of NEXTSTEP) because the system we received did not include an EISA-configuration utility disk. The Compaq 486 wouldn't run at all, but that was probably a problem with our individual unit. The DEC arrived underconfigured and requiring a video driver that is not yet available. We had to benchmark a different NCR than the one supplied by the vendor because the one we received inexplicably would not boot with NEXTSTEP – even for the manager of NeXT's Software QA lab, who had personally signed off on the compatibility of that model.

Once you've got NEXTSTEP installed and the machine reboots, you'll want to run the NEXTSTEP Configure application to tell NEXTSTEP which brand of SCSI interface card, video adapter, network interface, serial ports, and sound card you happen to have, and which interrupts are currently being used. Determining where they should be mapped in the computer's memory space rarely requires user intervention. If you create a conflict, for example, by assigning both the floppy disk and SCSI controller to the same interrupt; Configure will alert you to the conflict and give you a chance to correct it.

It's possible by using Configure to misconfigure your system so that it will no longer boot. If you do this, don't panic. Instead, press your computer's reset button, and at the NeXT boot prompt type **config=Default**. This will cause NEXTSTEP to boot using its built-in SCSI drivers and the standard low-resolution (640-by-480) VGA device driver. You can then log in as root and try again with the Configure application.

Considering all of the difficulties with installing NEXTSTEP, we offer a simple suggestion: If you can possibly get NEXTSTEP preinstalled on your '486 computer, do it!

of 99MHz. The DX3 will offer a noticeable performance improvement over other '486 chips but will not be as fast as the Pentium. Sometime in the first half of next year, Intel will introduce a '486/Pentium hybrid, the P24T, and Pentiums running at 100MHz. The P24T is designed to fit into a socket that exists on the motherboard of most of the machines we tested and will offer near-Pentium performance. For now, most NEXTSTEP developers will likely be satisfied with the compilation performance of the DX2/66.

Bus: Having a fast bus in your system speeds communication between the CPU and any cards that are plugged into the bus (see the sidebar, "Take the Bus"). For example, if your video card plugs into the bus (as is the case with most of the systems we tested), having a fast bus will speed video performance. A high-speed disk interface plugged into a fast bus will likewise speed compiling.

The importance of the bus diminishes with integrated systems, such as the NEC and Intel GX, which put the video and disk interface directly onto the CPU board.

Graphics: Having a fast graphics subsystem makes windows drag and scroll perceptibly faster. While fast graphics won't speed your compiles, they do make the system more enjoyable to use. Since NEXTSTEP treats the graphics subsystem as a dumb frame buffer, graphics performance depends largely on how fast the computer's CPU can transfer data to, and within, the system's video memory.

We found that local-bus video systems offered the best graphics performance. The zippiest graphics were to be found on the Dell DGX (thanks to Dell's JAWS video subsystem), followed by systems from eCesys, Epson, and Lucky-Goldstar that are equipped with Chips & Technologies' Wingine video chip. PCs using the ATI Mach-32 chip (AST, Continental, Data General, NCR, and Intel) were consistently slower, because a bug in the ATI chip causes wait states when writing directly to the frame buffer. The next revision of the ATI chip should be significantly faster.

All three Wingine-based PCs were jittery: Vertical lines oscillated left and right for no apparent reason. This sideways jitter made the systems somewhat annoying to use, despite the Wingine's faster graphics performance. We were unable to test NeXT's new driver for newer Epson Progressions (capable of displaying 16-bit color at 1120 by 832 pixels) that reportedly will eliminate this motion.

On the other hand, Compaq's QVision board provided the most stable video image of the machines tested. It was also the only PC that NEXTSTEP 3.1 supported at the 1280-by-1024 resolution (in 8-bit grayscale mode only). Unfortunately, the QVision's EISA-implementation helped make it the slowest performer of the bunch.

We were able to run the NEC Express/II in grayscale mode only, because NEXTSTEP 3.1 does not drive the computer's ET 4000 graphics subsystem in color.

With the notable exception of Dell's JAWS technology, these systems provided slower graphics performance at lower resolution than the comparison NeXTstation Turbo Color. We look forward to running NEXTSTEP in 16-bit-color mode at 1280-by-1024 resolution on some of the latest high-performance video adapters. Drivers for these adapters should be available later this year.

Disk: Since NEXTSTEP uses the hard disk for virtual-memory swap space, having a fast hard-disk drive and disk interface will do more than make your programs load faster; it will speed up the performance of your entire system.

The fastest SCSI interface cards we tested were DPT's 2012 and 2022 and BusLogic's BT747 EISA cards. Unfortunately, DPT's cards appear to have compatibility problems with certain CD-ROM drives.

DPT's SCSI adapter is unique among the SCSI cards we tested in allowing the user to add from 0.5MB to 16.5MB of additional RAM, which is used exclusively as a disk cache. We tested the DPT in the Data General, both with and without an additional 4.5MB of cache memory. Not surprisingly, we found that adding the cache RAM dramatically improved the overall performance as measured by the Compile benchmark. (Due to cache overhead, raw disk performance actually decreased with the additional RAM.)

Many of the PCs equipped with Adaptec's ISA-based 154X-series cards achieved different disk-transfer rates, even with the same SCSI hard disks. The explanation lies with a jumper switch on the Adaptec interface board that sets the board's DMA (direct memory access) transfer speed; in testing these PCs, some manufacturers set the speed to the maximum rate at which their system can reliably operate, giving it higher performance.

We also compared the performance of the Adaptec 1540C in the Advanced Logic Research machine with its synchronous SCSI turned both on and off. We found synchronous reads to be nearly 20 percent slower than asynchronous reads; overall performance of our disk-intensive Webster benchmark decreased by five percent in the synchronous mode.

The fastest disk performance we found was from the NEC Express/II, which was equipped with the integrated DPT 2022 SCSI controller.

None of the systems tested included local-bus SCSI controllers, and none are supported under NEXTSTEP 3.1. When drivers become available for local-bus SCSI adapters, we expect them to be at least as fast as the EISA controllers. NEXTSTEP 3.1 also doesn't include a driver for the Adaptec 6260 SCSI interfa
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Adaptec 6260 SCSI interface card (provided by Compaq and integrated on the motherboard of the Intel GX) or its successor, the 6360. A 6260/6360 driver is being developed.

Lastly, we found some PCs to suffer SCSI errors due to long, circuitously routed ribbon cables of poor quality. The biggest offenders in this category were Compaq and Dell.

Other factors

Monitor quality varied more than any other factor among the PCs we tested. We found that Compaq's QVision-200 and NEC's 5FG were actually better than NeXT's 17-inch color MegaPixel Display; some monitors, like Data General's, were about as good; and others, like Dell's Ultra Scan and Lucky-Goldstar's Logisys, were quite unpleasant. If monitor quality is of the highest importance, consider choosing a system without a monitor and buying it separately. Ikegamis are the best monitors we've seen for running NEXTSTEP.

If you're used to the sleek styling and solid construction of NeXT's black hardware, you won't like what the Intel world has to offer. We found the PC cases to be poorly designed; they were difficult to open and close and were held together by too many screws.

The machines the with best construction were Data General's '486 DX2/66 LE2 and Intel's GX. Both computers were put together with precision and obvious attention to workmanship. Data General's was the only computer we tested that could be opened without special tools. It had no screws; like a Chinese puzzle, though, it took us nearly half an hour to figure out how to take it apart.

None of the systems were equipped with floppy-disk drives that could notify the operating system when a floppy-disk was inserted or eject a floppy under program control.

Price and support

Comparing prices for NEXTSTEP PCs is difficult at this time, since many vendors supplied only estimated prices for our configurations. Some models are subject to substantial discounting while others are not. Nevertheless, the range of prices in our chart – from less than $5000 to more than $8500 for Compaq's Pentium – is well below NeXT's former pricing for a comparably equipped NeXTstation Turbo Color. We were very surprised to find that the NCR system was the least expensive in our group. Among the best price/performance values in our comparison were the systems from Lucky-Goldstar, eCesys, Continental, Pioneer, and NEC. Strong performers at a higher price point included Dell and Data General.

For many buyers, factors like the preloading of NEXTSTEP, the support staff's level of knowledge, and the length of the warranty will be as important as either price or performance. We did not attempt to judge these factors for this article, but they will be a part of our rating criteria in future issues.

The findings

All of these PCs represent compromises in dollars, features, and performance. Nevertheless, we were struck by how similar all of them really are. Each machine had different advantages, owing to the manufacturer's choice of monitor, bus, SCSI interface, and video adapter. But an ATI graphics adapter on one system performed similarly to an ATI adapter on another; the same is true for CPU and SCSI choices.

NeXTWORLD benchmarks

Vendor	System	MIPS	Graphics VRAM–VRAM	Graphics DRAM–VRAM	Disk speed (KB/sec)	Webster benchmark (sec)	Compile benchmark (sec)
NeXT	NeXTstation Turbo Color	23	1.00	1.00	1600	46	65
Advanced Logic Research (ALR)	ALR Evolution IV 4E/66D	39	0.44	0.79	1550	41	**69**
AST Computer	Premmia 4/d	40	**0.16**	**0.28**	**1030**	49	62
Compaq Computer Corporation	Compaq Deskpro 5/60M	**55**	**0.25**	**0.59**	1250	**31**	**46**
Continental Computer Corporation	Continental System 4000 for NeXT	36	0.44	0.71	**1990**	48	53
Data General Corporation	486 DX2/66LE2	40	0.44	0.70	**1800**	46	**44**
Dell Computer Corporation	Dell 450DE/2 DGX	**25**	**1.24**	**1.31**	**1820**	48	52
eCesys	eCe466NX-IT01	38	**1.14**	0.76	1280	44	62
Epson America	Epson Progression NX	31	**1.28**	0.71	1400	**57**	**73**
Lucky Goldstar Int'l (America)	Logisys 466NX/2	38	**1.18**	0.85	1280	40	62
NCR Corporation	NCR System 3333	36	0.49	0.80	1240	43	51
NEC Technologies	Express/II 466ST	40	0.83[1]	0.80[1]	**2860**	43	**49**
Pioneer Technologies Group	Intel GX/Professional	37	0.45	0.74	1400	**38**	66
		Bigger is better	Bigger is better	Bigger is better	Bigger is better	Smaller is better	Smaller is better

[1] *Grayscale only* — ■ *Stronger performers* — ■ *Weaker performers*

Rating the speed of a system running NEXTSTEP isn't as simple as comparing MIPS and WINMARKS in the Windows world. While it is easy to gauge the speed of a computer's CPU and disk, NeXT's Display PostScript system complicates graphics benchmarking. Unlike Windows, NEXTSTEP doesn't draw its windows directly on the screen. Instead, windows are drawn in off-screen buffers and then block-transferred to video memory. That's what gives NEXTSTEP its characteristically smooth window manipulation. Gone is the need for high-performance graphics accelerators. NEXTSTEP only needs a fast CPU and a clear path between the CPU and the video memory.

Four factors therefore determine how fast a computer is: the speed of its CPU; the speed that data can be transferred from the computer's system RAM (DRAM) to video RAM (VRAM), which determines how fast windows can be drawn and updated; the speed at which data can be transferred from one part of VRAM to another, which determines how fast windows can be dragged on the screen; and the disk's data transfer rate. Our benchmarks directly tested these four aspects of system performance. The graphics performance numbers are indexed to the speed of a NeXTstation Turbo Color.

To get an overall measure of system performance, we created a user benchmark that looked up several hundred words in the Webster dictionary. This exercised the system's drawing capability, interprocess communications, and disk-access speed.

Lastly, since developers are primarily interested in the speed at which a computer can compile their programs, our developer benchmark timed the system's speed while compiling the source code for NEXTSTEP's BusyBox demonstration application.

We believe the Webster and Compile benchmarks to be better indicators of real-world performance than raw performance numbers for individual components.

Our two real-world benchmarks, Webster and Compile, confirm that most of the machines are faster than a NeXTstation Turbo Color for typical tasks. Leaving aside the Pentium, the fastest compile times were achieved by the Continental, NEC, NCR, and Dell systems. The machines fastest at running the Webster benchmark were the Data General, Compaq, and NEC models.

Being fans of black hardware, we were attracted to Intel's GX, a tightly integrated system that looks remarkably like a white NeXTstation. The GX features an integrated SCSI and ATI video interface on its system board, as well as built-in 16-bit sound (sound and SCSI are not yet supported). Our chief complaint was that the GX's integrated SCSI interface lacks a connector for an internal drive. The NEC Express/II also integrates the SCSI and video controllers on the motherboard. Integrated designs are easier to configure and may cost less, but they could limit future expandability.

While Dell's 450DE/2 DGX offers the best graphics performance, its high price and disappointing CPU performance might cause developers to shy away from purchasing the system. We hope to see a Pentium PC with JAWS graphics. On the other hand, Epson's Progression might make a great developer's workstation – but its ISA bus results in slow disk access.

Considering the hype that has accompanied the introduction of Intel's Pentium chip, we were surprised by the poor performance of Compaq's Pentium machine. While this computer's CPU had the fastest MIPS rating, its IDE disk subsystem slowed it down when compiling. Its video performance was likewise compromised, thanks to Compaq's QVision board. It shows that having a fifth-generation Intel processor isn't enough to guarantee a killer system: All aspects of the computer must be fine-tuned to achieve high performance.

A few of these machines have not been approved by NeXT to run NEXTSTEP. Unauthorized systems will probably work, as long as NEXTSTEP drivers are available for the SCSI adapter and the video interface is installed. There are, however, hundreds of '486 motherboards on the market, and reports from the field indicate that some of them are not compatible. Buyer beware.

So how does Intel hardware stack up against the Motorola standard? As a group, today's NEXTSTEP-compatible PCs are slightly faster and considerably cheaper than NeXT's late hardware. On the other hand, they are not as well-designed or as easy-to-use. There is, as yet, no one system that is ideally suited for NEXTSTEP development. If you need white hardware for development projects today, we recommend purchasing a system with both EISA and VESA local buses: Such systems offer the greatest promise for upgrading during the coming years.

Take the Bus

IBM's original PC had a bus that was 8 bits wide and ran at 4MHz. The PC/AT expanded the bus to 16 bits wide and upped its speed to 6MHz. Today, we call the 16 bit PC bus industry-standard architecture (ISA), and its speed has crept up to 8MHz.

ISA has two significant shortcomings that limit the performance of an ISA NEXTSTEP system. One is the data bus: Only 16 bits wide, it transfers data at about 16MB/sec. If you plug a video adapter into the ISA bus, NEXTSTEP won't give you anything but 2 bit gray. Also, ISA's address bus is only 24 bits wide. Since 24 bits can only address 16MB of memory, an ISA SCSI controller that reads data from a disk destined for memory above the lower 16MB must write it to a buffer in the lower 16MB; the CPU must then copy the data to its destination. This is called double buffering.

EISA (Extended Industry Standard Architecture) runs at 8MHz, and both its data and address buses are 32 bits wide, eliminating the need for double buffering and giving it a maximum bandwidth of 32MB/sec. EISA provides ample performance for SCSI and Ethernet but still leaves much to be desired for graphics performance. Hence, local bus.

Local bus refers to a bus that is connected directly to the processor, similar to the computer's memory bus, an idea originally pioneered by Dell. Other PC vendors followed suit, developing a host of proprietary and incompatible implementations.

To standardize the local-bus arena, the Video Electronics Standards Association developed the **VESA Local Bus**, often referred to as VLB or simply VESA. Like EISA, VLB is 32 bits wide. Local bus, however, runs at the processor's external speed: A '486 DX2/66 has a local bus running at 33MHz, giving it a throughput of 132MB/sec.

With the exception of Compaq and Dell, most vendors have dropped their proprietary local-bus implementations in favor of VESA. (All the machines using C&T's Wingine chip set also have proprietary local-bus implementations, since Wingine is inherently incompatible with VESA.)

Competing with the VESA Local Bus is Intel's **Peripheral Component Interconnect**, or PCI. Unlike local bus, PCI is independent of the computer's CPU. Thus, a PCI card can work with, say, Intel's Pentium or Motorola's PowerPC. The advantage that VESA holds over PCI is price. It is expected that VESA will remain dominant in '486 machines and that PCI will become dominant in Pentium machines.

NEXTSTEP works just fine with ISA, EISA, VESA, and PCI systems. NEXTSTEP won't work with MicroChannel Architecture (MCA) computers, such as IBM's PS/2 series.

Contact Information

Advance 2000, 8560 Main St., Buffalo, NY 14221-7435. 716/631-5602, 800/923-8262.

Advanced Logic Research, 9401 Jeronomo, Irvine, CA 92718. 714/444-4257, 800/444-4257.

AST Computer, 16215 Alton Pkwy., Irvine CA, 92715. 714/727-9292, 800/876-4278.

Compaq Computer Corporation, 20555 State Hwy. 249, Houston, TX 77070. 49/89/99.33.28.22, 800/345-1518.

Continental Computer Corporation, 835 N. Mountain Rd., Newington , CT 06111. 203/953-8649, 800/776-8649.

Data General Corporation, 3400 Computer Dr., Westboro, MA 01580. 508/898-4285.

Digital Equipment Corporation, 146 Main St., Maynard , MA 01754, 508/493-5111, 800/722-9332.

Dell Computer Corporation, 9505 Arboretum Blvd., Austin , TX 78759. 512/338-4400, 800/289-3355.

eCesys, 2125 Western Ave. #300 Seattle, WA 98121-2136. 206/448-0845, 800/733-2031.

Epson America, 20770 Madrona Ave., Torrence, CA 90503. 310/782-0770, 800/922-8911.

Lucky Goldstar Int'l (America), 4487 Technology Dr., Fremont, CA 94538, 510/657-2229.

NCR Corporation, 1700 S. Paterson Blvd., Daton OH, 45479. 513/445-1000, 800/637-2600.

NEC Technologies, 1414 Massachusetts Ave., Boxborough, MA 01719. 508/388-8888, 800/388-8888.

Pioneer Technologies Group, 15810 Gaither Dr., Gaithersburg, MD 20877. 301/921-3983.

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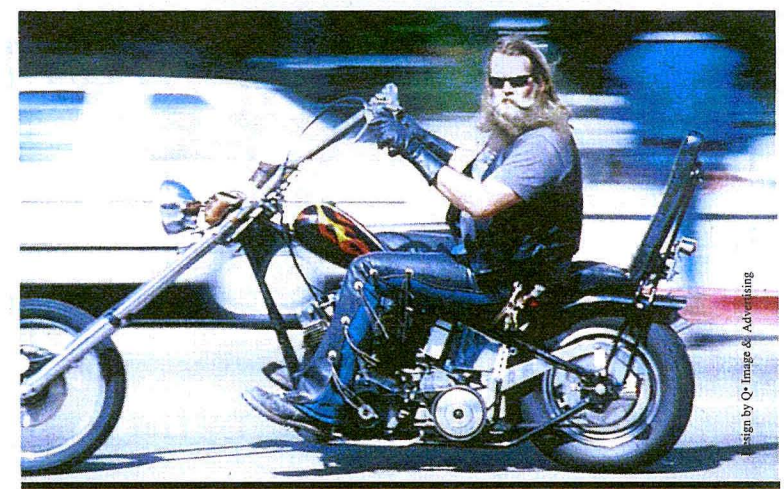

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First Impressions

SIMSON L. GARFINKEL

The week before NeXTWORLD Expo, I spent two days trying to install NEXTSTEP on a Gateway 2000 with an Adaptec SCSI controller. The problem: My CD-ROM drive had been set to SCSI target ID No. 6 instead of No. 1. According to NeXT, Adaptec requires that each SCSI device have a sequential target address, without any gaps or empty addresses.

The only problem with this explanation is that it doesn't have to be true. While Adaptec's ROM may have a brain-dead search algorithm, NEXTSTEP doesn't have to emulate that behavior. If NeXT had written its Adaptec driver to reprogram the board and then scan every SCSI address, I would never have had any difficulty getting NEXTSTEP installed on the Gateway.

The week following Expo, I tried to get NEXTSTEP to install on a Dell DGX with a DPT SCSI controller. After three days and numerous telephone calls to NeXT, I finally tracked down the problem: NEXTSTEP doesn't work with DPT's default configuration. To get the operating system installed, I had to run DPT's configuration program and change the board from its "primary" to its "secondary" configuration.

Once again, it's a problem that could have been avoided with a better NEXTSTEP driver. Instead of requiring that the DPT board be in its secondary configuration, NEXTSTEP should work with either. (NeXT claims that people don't use DPT's primary configuration because it conflicts with IDE drives, but most people who purchase a DPT SCSI board probably aren't going to have IDE drives.)

These are not isolated incidents. Lots of people – even gurus inside NeXT – are having problems getting 3.1 running on white hardware.

I tried to install NEXTSTEP on a third system. Each time, the system halted with a cryptic error message: "vnode_pagein error ... Exception #3 raised, press c to continue." It sure seemed like a bug in the operating system to me, so I called NeXT to report it. A few hours later, I discovered that the fault was my own: improper SCSI bus termination. But the whole thing could have been avoided if NEXTSTEP's installation procedure included a self-test of the CD-ROM drive and printed an error message if the driver wasn't up to spec.

Don't get me wrong – NEXTSTEP 3.1 is the most reliable version of the operating system that NeXT has ever produced. But NeXT has to realize that first impressions count. The problem isn't bugs with the software; it's an unwillingness on the part of the software to be more forgiving of typical human errors. And in the wild and wacky world of PC hardware, software almost always gets blamed, when the real fault lies with configuration snafus or flaky hardware.

NeXT must improve NEXTSTEP's installation procedure. NEXTSTEP has to sense the computer's configuration and accommodate it. NEXTSTEP must perform rudimentary self-tests on the computer's hardware and print diagnostic messages that can be understood by mere mortals. The installation and boot-up programs should be modified to incorporate "watchdog timers" so that, if the system crashes, the watchdog utility at least tells the user and gives some indication of what went wrong. Otherwise, many people evaluating NEXTSTEP might give up on the operating environment before they even get it up and running.

SIMSON L. GARFINKEL is a NeXTWORLD senior editor.

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Prevent Defense

DAN LAVIN

Now that NeXT has exited the hardware business, its competitive advantage is sharply focused on the ease of object-oriented development under NEXTSTEP. That advantage is clear and easy to communicate but not necessarily a constant. Competitive systems from Microsoft and Taligent are targeted to match and perhaps leapfrog NEXTSTEP in the next few years.

What should NeXT do with its one- to two-year lead so it continues to enjoy a competitive advantage after the big boys ship their software?

Until now, NeXT has been playing the computer version of football's prevent defense. On the gridiron, you can sit on your lead by giving up ten yards a down but preventing a breakthrough play that scores a touchdown. It's not great football, but it is an effective way to run out the clock.

In the software industry, there's no clock. Sitting on your lead doesn't work.

It didn't work for Apple when it enjoyed a five-year head start in graphical-user-interface design. Microsoft finally shipped a workable version of Windows, which, despite an inferior design, now outsells Macintosh by a wide margin.

It won't work for NEXTSTEP, either. To take advantage of its technology lead, NeXT has to either dominate the market so completely that competitors yield to it or keep its product moving forward so quickly that competitors will be unable to catch up.

Right now, it is not doing either one. NEXTSTEP as it exists today is essentially the same product that shipped in 1988, built according to a vision enunciated in 1986.

Eventually, NEXTSTEP will be outstripped by its plodding competitors, unless NeXT exercises its vision and makes some quantum leaps. These advances could come as further refinements to the OS. For example, NeXT needs to complete its work on an object-oriented file system and ship it will before other system-software vendors offer their own implementations.

Unfortunately, history shows that NeXT does not excel at incremental improvement. With apologies to the gifted engineers in software, and for reasons often beyond their control, NeXT usually makes a great leap forward and then stalls. Look at Mail. The only difference between the original Mail and the current version are some icons. The same is true for NEXTSTEP's UNIX tools.

Where NeXT does excel is in taking complex technologies and putting a usable front on them. Now is the time for NeXT to be bold and apply the advantages of NEXTSTEP to the problems and opportunities of the convergent future. ("Convergence" is jargon for the melding of telephony, television, and computers.) One can envision an extension of mission-critical applications that take you beyond the desktop and even off the computer as we know it.

I'm not suggesting that NeXT should take its eye off the ball. The vast majority of the company's efforts should go toward steady progress in the right direction. NeXT, however, should also work toward setting a grand blueprint for the far future, one that would keep the pressure on competitors while providing inspiration for employees, partners, and customers.

Whether it concentrates on grinding out yardage on the ground or goes for a long technology bomb, NeXT can maintain its competitive advantage. The one thing it must not do is play a prevent defense.

DAN LAVIN *comments on business issues in NeXT Ink.*

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Project Progress

TaskMaster whips up project plans

by DAN RUBY

NEXTSTEP is a natural platform for project-management applications. A high percentage of its users work at sites implementing major projects, typically software development or government contracts. Also, the NEXTSTEP interface and client-server model would seem to offer a perfect environment for taming the complexities of project planning and tracking.

Yet this application category – one filled with strong products on PC and workstation platforms – has been sorely underrepresented on NEXTSTEP. Pittsburgh Project Manager from Visus is a marginal product, and AEC Software's FastTrack Schedule is designed only for making Gantt chart presentations, not managing project data.

Now Lighthouse Design has stepped in to fill the gap with TaskMaster, a full-fledged project-management system including what-if analysis and resource levelling. We found that Version 1.0 of the software, which is shipping in limited release to large customers for $1395, is a strong first cut at meeting the feature set, design, and performance needs of typical users. It lacks, however, one basic feature – PERT charts – found in most competitive products on other platforms, and it lacks some high-end features.

Lighthouse plans to release a feature upgrade, probably 2.0, later this year.

TaskMaster 1.0

This first release of a midrange project-management system offers a rich feature set and a highly accessible design but lacks PERT charts and high-end functionality.

$1395

Lighthouse Design, 2929 Campus Dr. #250, San Mateo, CA 94403. 415/570-7736, 800/366-2279.

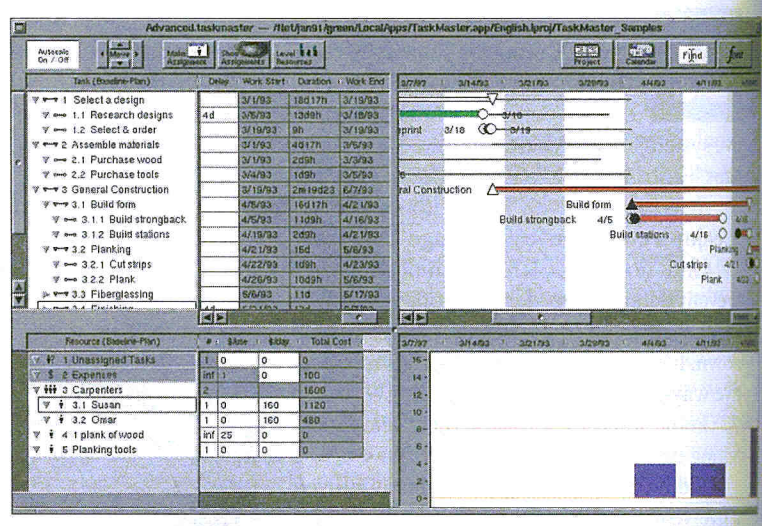
As expected, TaskMaster's strongest point is usability. Because of its roots in arcane management science, project-management software has traditionally been inaccessible to nonprofessionals. Some releases for Macintosh and Windows have attempted to package the concepts of project management for average users, but often at the expense of power and complexity.

Split level

TaskMaster presents a rich, attractive, and accessible interface to the user. Its main window is divided into four parts: task outline, Gantt chart, resource histogram, and resource outline. A movable "splitter" can be adjusted to reveal more or less of each view.

With added interface niceties such as a tool ribbon and an option-packed Project panel, TaskMaster equals or surpasses project-management packages on other platforms for pure usability. Even so, it is not perfect: The splitter approach is too limiting. Also, the main window and Project panel may be oversized for lower-resolution PCs. The company says that it plans to refine the interface in 2.0.

The Task and Resource views combine a Concurrence-like outliner with an Improv-like spreadsheet. You enter project data into spreadsheet cells but control the structure of the spreadsheet from the attached outliner, expanding and collapsing cells to create a hierarchical structure that models the project. The task outline includes data such as starting and ending dates, dependencies, constraints, and priorities. The resource outline contains cost data for the personnel and equipment assigned to the project. Once you assign a resource to a task (either by dragging and dropping or by selecting the items and pushing a button), information from each view is integrated into the other as an additional spreadsheet dimension.



TaskMaster's interface combines an outliner and a spreadsheet with two chart types.

Just as the spreadsheet is attached to the outline, the Gantt chart is an extension of the spreadsheet. The chart is a visual representation of the project data, displaying each task as a bar whose length, color, end symbols, and titling show project detail at a glance. Critical-path and impossible constraints are called out, as are milestones and delays. The program provides a great deal of customizability in chart appearance, so it easily rivals FastTrack Schedule as a presentation tool.

Beyond usability, TaskMaster is strong in its handling of tasks and resources. Only disk space limits the number of each you can use. The program provides eight kinds of task constraints. Each resource has its own calendar.

The resource-load chart shows at a glance when resources are overloaded. TaskMaster's leveling algorithm works by reassigning resources or inserting delays to bring each resource down to its scheduled work load. We didn't undertake benchmark tests, but scheduling performance with a large sample project on a NeXTstation was more than adequate.

Once you have completed one or more project plans, you can also use TaskMaster to track actual performance. The program effectively presents comparisons between plans and actuals to allow the user to make midcourse corrections.

Although it has much to recommend it, TaskMaster has some significant shortcomings as well. Most glaring is the absence of a PERT chart or network diagram. This type of diagram of the relationships between tasks in a project is a standard feature in almost all project managers on other platforms.

TaskMaster's outliner fulfills the brainstorming function of a PERT chart, and the program provides an acceptable (though less intuitive) alternate method to set dependencies. Also, project files can be opened in Lighthouse's Diagram program to produce a flowchart for presentation purposes (though this process is not well documented). Nevertheless, the absence of PERT charts is a significant omission.

Also missing in this release are standard reporting formats. For now, other than printing task outlines and Gantt charts, the only way to produce summary data for presentation and reporting is to export the data to another program for formatting. Import and export functions worked well.

While TaskMaster supports the linking of multiple projects and provides a coding system for a work-breakdown structure, it lacks the features of other high-end project-management systems. For now, users searching for a client-server system that has security and record locking for multiple users will have to look elsewhere.

Despite our high standards, it may be unreasonable to expect that a product can attain state-of-the-art status in its first release. In Version 1.0, TaskMaster earns high marks as a solid project-management implementation for NEXTSTEP, but its missing features leave it short of a cross-platform contender.

DAN RUBY *is editor in chief of* NeXTWORLD.

NeXT

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by LEE SHERM

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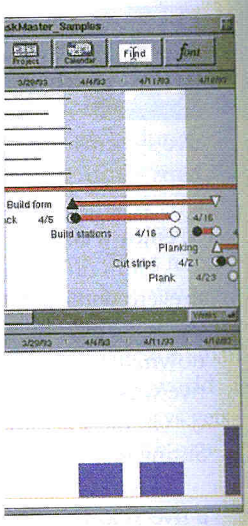

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UBY *is editor in chief of*
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NeXT TV

Screen Machine II brings video capabilities to NEXTSTEP PCs

by LEE SHERMAN

Now that NEXTSTEP runs on industry-standard PC hardware, users can benefit from the many low-cost multimedia boards becoming available. Screen Machine II is the latest generation of a video-capture board from Fast Electronic GmbH that has become popular in Europe for providing real-time video-digitizing and video-in-a-window capabilities on a single add-in board.

The hardware is identical to that provided for any PC, but the NEXTSTEP version comes with specialized software for displaying video in a window, frame-grabbing, and controlling an optional television tuner. Screen Machine II digitizes images in either 24-bit true-color or grayscale mode and can display live video in any size, and at any position, on a VGA monitor.

Designed to provide a complete video solution for NEXTSTEP PCs, Screen Machine II is notable for duplicating much of the functionality left behind with the demise of the NeXTdimension hardware – but don't expect to find the same level of integration. In developing the board, Fast had to contend with the limited bandwidth available for transferring live video over a PC bus. A compromise was reached by letting the Screen Machine itself perform all processing of the video signal and then overlaying it onto the monitor signal. Unfortunately, this prevents cutting and pasting video into other applications.

In order to allow window controls for miniaturization, closing, and resizing to work, the video overlay is mapped to a NEXTSTEP window. Since the video isn't actually playing back in a true NEXTSTEP window, other on-screen graphics, such as menus and inspector panels, can interfere with it, causing problems with the screen display.

Making the connection

We installed the Screen Machine II in a Lucky-Goldstar '486 PC that met the requirements for NEXTSTEP. Once the card is installed, you replace the computer's cover and connect it to a video source. Screen Machine can accept either composite or S-VHS video input, meaning it will work with nearly any video source, including camcorders, video recorders, laserdisc players, S-video, Video 8, U-Matic, and still-video equipment in any standard (PAL, NTSC, and SECAM).

Screen Machine II takes up one 16-bit ISA or EISA slot and connects directly to a VGA card with a standard feature connector (audio requires a separate slot). No special configuration was required to get the Screen Machine to operate – no small achievement, given the problems of combining incompatible video signals on standard PCs.

Because the card requires a loadable kernel, it is necessary to use the UNIX command line to install the driver software and add a line to your **/etc/-kern_loader.conf** file if you want it to load automatically when you start up the software. Fast is planning to use the NeXT DriverKit to get around this

Screen Machine II

Screen Machine II provides high-quality video capture and video-in-a-window capabilities for NEXTSTEP PCs, bringing back much of the functionality of the NeXTdimension. For now, it is most useful for grabbing single frames or watching television on your screen. When NEXTIME arrives, the Screen Machine may turn out to be the best way to make movies for NEXTSTEP.

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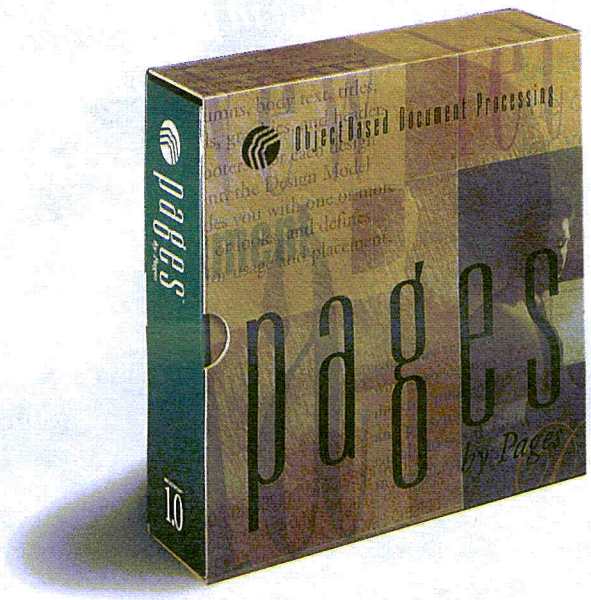

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in a future release.

With a VGA display, you can grab images and monitor the video signal in real time at resolutions of 640 by 480, 800 by 600, and 1024 by 768 – the higher resolution is unique among video overlay cards. Built-in digital filtering helps clean up noisy signals, resulting in a high-quality image, even when resized to your monitor's full screen size. Captured video frames are stored in a proprietary YUV format that Fast calls FLM but can be converted to TIFF for use in other applications. You can apply either LZW or JPEG compression to individual frames, but it isn't possible to capture video sequences due to the lack of hardware compression.

On-screen controls let you adjust the brightness, contrast, saturation and hue of the video signal.

Some limited but fun effects can be applied to the incoming video while it is playing, such as bouncing the video image across the screen, and inverting or flipping it upside down.

Screen Machine II ships with separate applications for controlling the TV tuner, grabbing sequences, capturing single frames, and playing back video in a resizable window. You also can capture closed-captioning information and convert it to an ASCII file.

Maybe NEXTIME

The software's biggest drawback is its lack of support for digital video sequences. You can capture a series of sequential frames to disk as TIFF files, but these can be animated only if you have software such as Xanthus CraftMan, which lets you play them back at a high-enough frame rate to simulate video.

Without an established standard (such as QuickTime or Video for Windows) for recording, storing, and playing back digital video, Screen Machine fails to live up to its full potential. When NEXTIME arrives (sometime in 1994), it is expected to include plug-in support for all current compression/decompression schemes, including those used by QuickTime and Video For Windows. In addition, NEXTIME will be capable of playing QuickTime and AVI (Windows) files directly. Fast already has a piggyback board in production for the Screen Machine with on-board Indeo hardware compression.

If you'd like to add video-capture capabilities to your own NEXTSTEP applications, you can program the board with the API kit. Completely object-oriented, the kit provides an NXLiveVideo view, and compatible classes, objects, and palettes.

Screen Machine brings video capabilities back to NEXTSTEP. Now those who want their NeXT TV can have it.

LEE SHERMAN *is a* NeXTWORLD *contributing editor.*

With Screen Machine II's optional tuner, you can watch broadcast television in a window on your computer and capture individual frames.

In-house

Can high-resolutic setting be as e printing to a Ne Printer? Very ne as demonstrated Goldleaf Imagesetters and SET software from GS Co (formerly Goldleaf Systems

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In-house Typesetter

Can high-resolution imagesetting be as easy as printing to a NeXT Laser Printer? Very nearly so, as demonstrated by the Goldleaf Imagesetters and eXTRASET software from GS Corporation (formerly Goldleaf Systems).

This combination of the Goldleaf Imagesetters (based on Linotype-Hell's family of low-end Ultre imagesetters) with Goldleaf's driver software is ideal for NEXTSTEP technical-publishing users who have limited color requirements. It is designed to simplify imagesetting, bring it comfortably to your desk in a standard office, and work seamlessly in the NEXTSTEP environment.

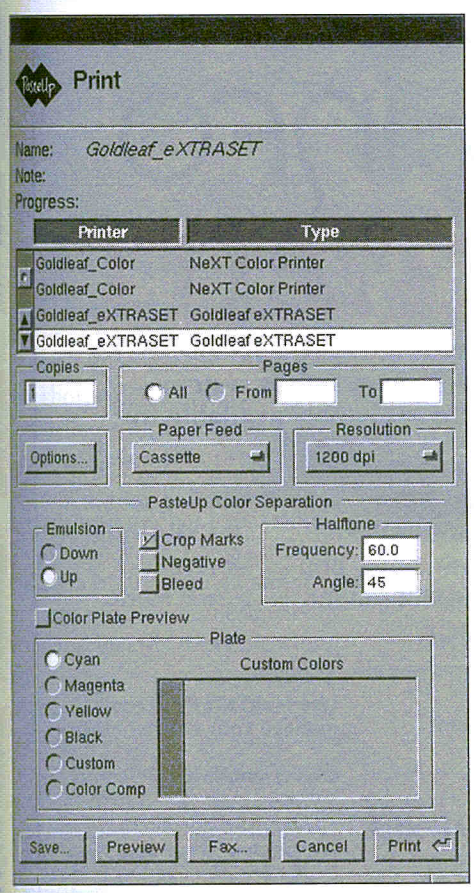
It is virtually plug-and-play. Load the eXTRASET software, hook up the compact unit (1 foot long by 2 feet wide by 2.5 feet tall at 140 pounds) to your workstation as a SCSI device, and you're in business – capable of running out film or paper, capable of even burning paper plates at resolutions of up to 3000 dpi.

You print to it as you would to a NeXT Laser Printer, specifying a few extra parameters: composite versus separated colors, resolution from 600 dpi to 3000 dpi, line-screen resolution from 60 lpi to 225 lpi, laser intensity, normal versus inverted image, mirrored versus normal image, and so on. Your workstation acts as a high-speed RIP, preparing all the calculations normally handled by any other imagesetter's expensive RIP, and directing the imagesetter's laser to record your image to its storage media. You will still need to have access to a film-developing unit to process the exposed media.

Any sort of imagesetter will require the support of a developing unit, and those can require messy chemicals and special plumbing. The Goldleaf Imagesetter system will work well in a situation in which you record your files to film and then send your exposed film out for developing. In general, the rastering process is the performance bottleneck at your local service bureau, while the developing units are often free and available.

eXTRASET requires 32-MB of memory (64MB recommended) and 200MB of free hard disk space (1GB recommended). Since the rastering process is processor-intensive, you should not expect to do anything else with your machine while it is rastering.

Goldleaf offers imagesetter models for both monochromatic or color work. For now, the color option is suitable for spot color only, not for continuous-tone separations. This is consistent with the requirements of most NEXTSTEP publishing users today. GS Corporation says that a future upgrade will include new screening algorithms that will make color-capable imagesetters instantly ready for continuous-tone work.



eXTRASET knows how to take advantage of whatever settings are presented in any NEXTSTEP publishing package's custom Print dialog boxes.

eXTRASET 1.1 with Goldleaf Imagesetters

High-resolution imagesetting made nearly as easy as printing to a laser printer. eXTRASET is a host-based RIP and an interface to the Goldleaf Imagesetters and other RIPs based on Linotype-Hell's Ultre imagesetters.

$10,000 eXTRASET with hardware upgrade kit;
$19,000 and up, Goldleaf Imagesetter and eXTRASET

GS Corporation, 929 Sir Francis Drake Blvd., Ste. C342, Kentfield, CA 94904. 415/257-4700; info@goldleaf.com.

My biggest complaint with the product is a hidden system-administration headache. Upon setup, you are required to run a special installation program in superuser mode; it reads the imagesetter's ID number (and the host ID if the host is a NeXT computer), and you must fax these to GS to receive a license code that enables the machine. I find that scheme to be unnecessary, considering the imagesetter itself is a 140-pound dongle.

I have saved the best news for last. In a day when imagesetters typically run in the $50,000 to $80,000 range, the Goldleaf Imagesetters cost from only $19,000 to $37,000; eXTRASET is included. (If you already have an Ultre-based imagesetter, you can buy the eXTRASET software with a special SCSI expansion card for the imagesetter for $10,000.)

Of course, the eXTRASET/Goldleaf Imagesetter combination is not suited for the highest-quality requirements. For high-gloss, high-color publications, you would want to consider a NEXTSTEP solution using high-end imagesetters (such as the Agfa SelectSet 7000 or Linotronic L630 products). For most NEXTSTEP publishing tasks, however, this product provides high-resolution output with amazing simplicity at a surprisingly low cost.

by RICK REYNOLDS

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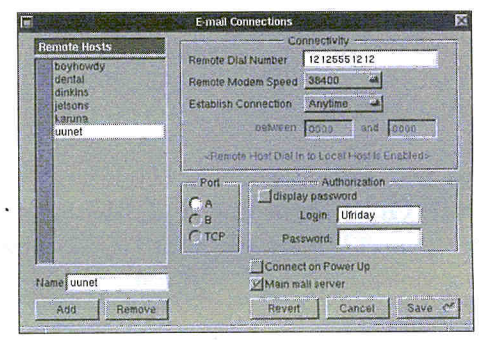

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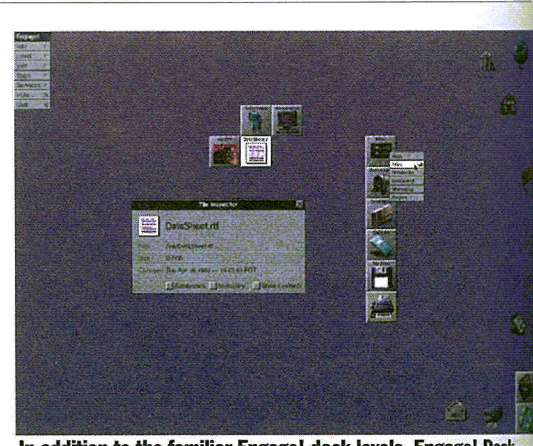
What's Up, Dock?

The basic operation of the NEXTSTEP workspace has not really changed since the introduction of Version 2.0 some three years ago. That's fine for users who are satisfied with the Dock, Shelf, and File Viewer provided by the workspace, but users who want a higher level of organization and navigability need additional features.

When we last looked at Dock extenders (*NeXTWORLD*, Summer 1992), we found Millennium Software Labs' Engage! to be the best of the lot. Now a new version, Engage! Desktop, provides an alternative not only to the Dock and Shelf, but also in general replaces many of the functions of the File Viewer and workspace.

The most important new features are the desktop and Smart Levels. The desktop metaphor will be familiar to users of other GUIs: You place applications, documents, and folders anywhere on the desktop. These are fully active icons that you can drag, drop, and link with other icons and documents. Double-clicking a folder opens it in the File Viewer. Double-clicking on a document opens it and, if necessary, launches an application. An option allows the display of graphics files as thumbnail views. The mail and fax-reader icons are active and show incoming mail.

Engage! has always offered a multilevel dock, enabling you to group applications, folders, and documents. The new Smart Levels feature automatically activates all items running on a given dock level when you switch to it, simultaneously hiding all other items in the workspace. This, in effect, allows you to a have a multidimensional desktop.



In addition to the familiar Engage! dock levels, Engage! Desktop allows fully functional icons to stick to the desktop.

Both of these features take on added value when used on a portable NEXTSTEP computer. With Smart Levels, only the applications and files related to a given task clutter up the screen.

Also included in Desktop are tools for changing the background color or image on the desktop and a built-in screen saver that accepts BackSpace modules. Desktop is designed to work with its sister product, Millennium's NoteBook, to organize bookmarks and page bundles.

As a whole, Desktop functions as an alternative file system, which will reap dividends for users who take the time to set up and maintain the system. It is great for people who respond to systems and organizational schemes. Others may find that it is more structure than they want or need. Even so, the quality of the product makes it well worth the risk for general users and almost essential for portable NEXTSTEP users.

by DAN LAVIN

Engage! Desktop 2.0

Millennium added desktop icons and Smart Levels to its already useful Engage! utility to create a product that can change the way you use the workspace on a daily basis. Its value to a particular user will depend on personal preference.

$149.95

Millennium Software Labs,1010 El Camino Real #300, Menlo Park, CA 94025. 415/321-3720; 415/321-3650 fax; engage@millennium.com.

IconMaker

$150

BlueSky Software, P.O. Box 57 man Oaks, CA 91403. 818/989 eronike@cerf.net.

The hardest thing about icons is learning to think pixels mapped to an unse With IconMaker, you do Instead, you draw natura lines and let the software onto the grid for you. It v text, too: Type normally, soon as you click outside tion, the text becomes a b Instead of offering a paint gram for miniatures, Blue provided tools that are sp designed for quickly gaini to, and editing, icons. A browser lets you modify a any application. With the of an eraser, multiple und commands for flipping, r and mirroring, IconMake the icon editor NEXTST needed since its inception.

Trilithon ViewFont, FontC MacToPfa

$69 each

Trilithon Software, 2 Ohlone, Po CA 94028. 415/325-0767.

With the rise of font offeri both type foundries and "f ies," Trilithon ViewFont c you decide what's worth a your library. The software you to drag and drop any Mac, PC, or NEXTSTEP, i or not in your system – ont that shows all encoded and coded characters. Clicking up a larger view that provi information about x- and y nates as well as character w The MacToPfa utility (as w PfbToPfa offering for PCs t not ready for review) easil verts and installs fonts but down dramatically if you h large font library. FontCase familiar Mac Suitcase capa to single-machine users or graphics-firm networks; ins requires some UNIX codin serious rearrangement of /L brary/Fonts. Rather than ju hashing Adobe TypeView o

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Reviews Desk

Even with NeXT's move to enterprise-sized applications, many smaller developers are continuing to make a living in the expanding NeXT marketplace. Most important this month is, finally, a decent icon-creation utility. Developers everywhere will be thankful for this unexpected windfall. – DAN LAVIN

This month's gang: ELIOT BERGSON (EB), LEE SHERMAN (LS), SIMSON L. GARFINKEL (SLG), RICK REYNOLDS (RR), AND MYSELF (DL).

IconMaker

$150

BlueSky Software, P.O. Box 57096, Sherman Oaks, CA 91403. 818/989-4928 fax; cronike@cerf.net.

The hardest thing about drawing icons is learning to think in square pixels mapped to an unseen grid. With IconMaker, you don't have to. Instead, you draw natural curved lines and let the software snap them onto the grid for you. It works with text, too: Type normally, and as soon as you click outside the selection, the text becomes a bit map. Instead of offering a painting program for miniatures, BlueSky has provided tools that are specifically designed for quickly gaining access to, and editing, icons. An icon browser lets you modify any icon in any application. With the addition of an eraser, multiple undos, and commands for flipping, rotating, and mirroring, IconMaker could be the icon editor NEXTSTEP has needed since its inception. **LS**

Trilithon ViewFont, FontCase, MacToPfa

$69 each

Trilithon Software, 2 Ohlone, Portola Valley, CA 94028. 415/325-0767.

With the rise of font offerings from both type foundries and "flounderies," Trilithon ViewFont can help you decide what's worth adding to your library. The software allows you to drag and drop any font – Mac, PC, or NEXTSTEP, installed or not in your system – onto a grid that shows all encoded and unencoded characters. Clicking brings up a larger view that provides information about x- and y-coordinates as well as character widths. The MacToPfa utility (as well as a PfbToPfa offering for PCs that was not ready for review) easily converts and installs fonts but slows down dramatically if you have a large font library. FontCase brings familiar Mac Suitcase capabilities to single-machine users or small graphics-firm networks; installation requires some UNIX coding and serious rearrangement of **/LocalLibrary/Fonts**. Rather than just rehashing Adobe TypeView or Font Installer from the MetroTools package, Trilithon's products offer integrated font-management capabilities for NEXTSTEP users. An Intel version is scheduled for Q4. **EB**

DateWise Version 1.0

$69

Ciusa, 3208 W. Lake St. #133, Minneapolis, MN 55416. 612/822-1604; info@ciusa.com.

DateWise is a rewrite of Stained Glass Software's Calendoscope, and its 1.0 version is unfortunately almost as weak as the program it replaces. DateWise keeps track of one or more individual calendars and combines them all into one group calendar view. It's not a group calendar program, though – only one person can access a DateWise calendar at a time. DateWise 1.0 has a new set of icons but keeps Calendoscope's clunky user interface and a few of the bugs. Version 2.0, which was released at press time, may address these problems. In any case, serious calendar users might be better off with Ciusa's forthcoming Day Tripper 2.0, which promises true group calendaring, an improved interface, and more features. **SLG**

PowerGuardian and Smart-UPS 400

$149.95 PowerGuardian; $449 Smart-UPS 400

BenaTong, 1057 Racine, Columbus, OH 43204. 614/276-7859. American Power Conversion, 132 Fairgrounds Rd., P.O. Box 278, West Kingston, RI 02892. 401/789-5735.

BenaTong has created a system that protects your NEXTSTEP computer from power fluctuations or failures. PowerGuardian talks to, and manages, the functions of any of the popular Smart-UPS line of uninterruptible power supplies by American Power Conversion. It also configures and starts a special UNIX daemon that constantly monitors the current condition of your UPS, giving it commands as necessary via a serial cable (which is included). PowerGuardian is a utility that allows any user to check line-voltage conditions, power reserves, and more. In a power failure, back-up current is supplied by the UPS until reserve power levels drop to your specified settings, at which time your workstation is gracefully powered down. This product works with Motorola- or Intel-based NEXTSTEP machines, but you must have an available serial port. Also, the UPS can't accommodate laser printers, which draw a lot of power but aren't really harmed by a sudden power loss anyway. **RR**

Pro Lexis Version 1.1a

$395 Canadian

Plexus Distribution, 189 rue Wiseman Outremont, Québec, Canada H2V 3J6. 514/270-1831.

Pro Lexis is a French-language dictionary and spelling checker of 500,000 words and is designed to work with WriteNow and WordPerfect running under NEXTSTEP 2.1 or 3.0. Pro Lexis is easy to use and very thorough. It has no problem recognizing the difference between two words and one word with a space in the middle or a word which should have a ligature. If you can't remember a proper verb conjugation, helpful grammar references are available at the touch of a button. Pro Lexis is especially necessary for those, like me, who don't use their French skills every day. **RR**

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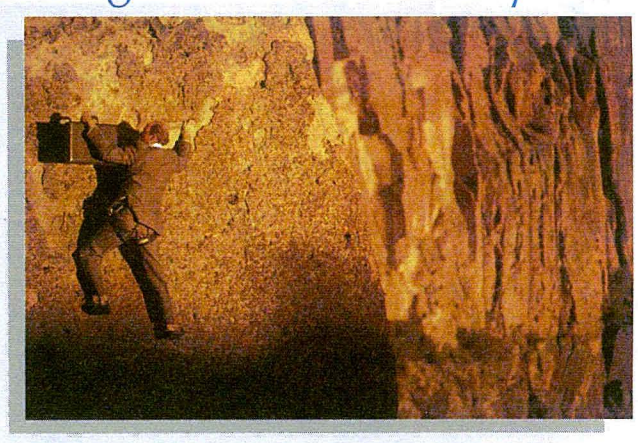

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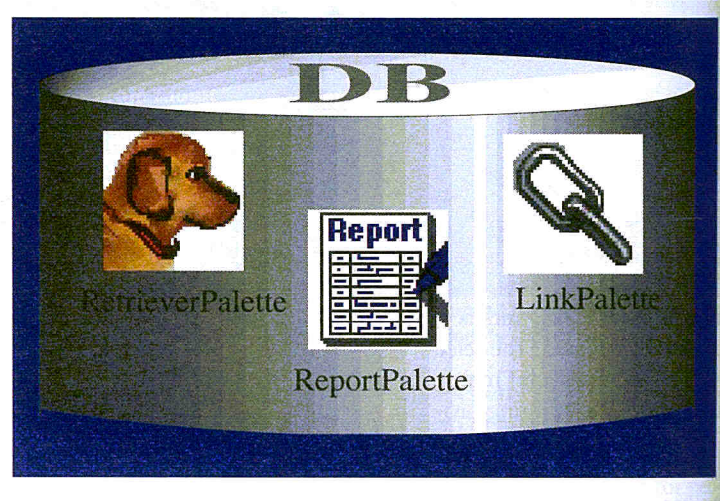

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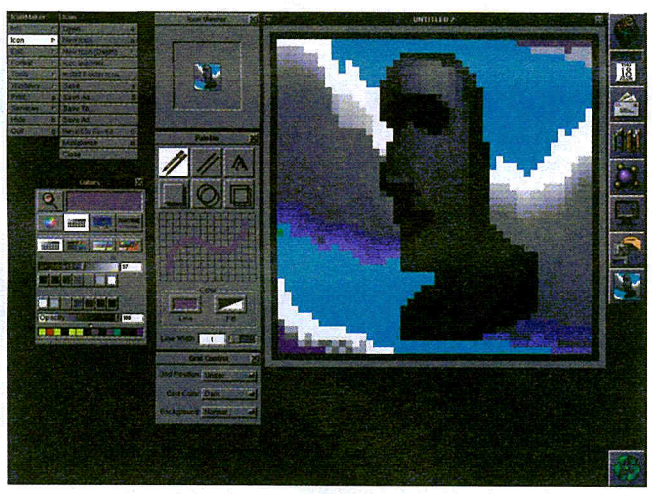

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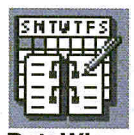
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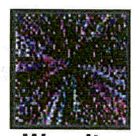
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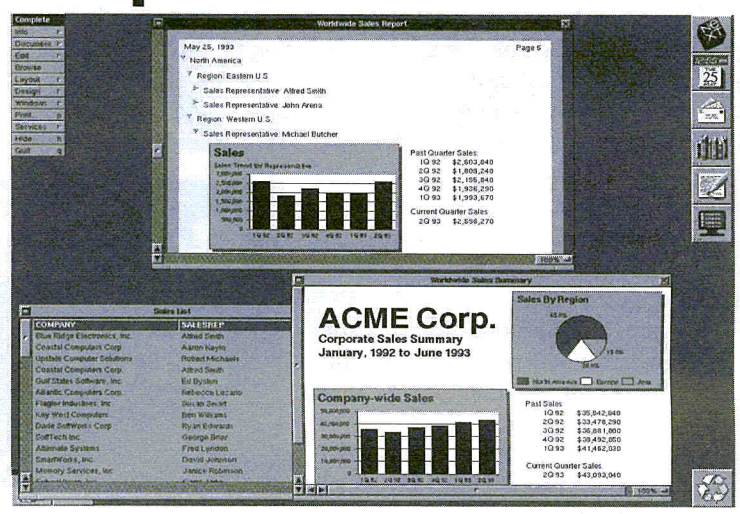

Complete Access is the database access tool that combines report writing, forms, outlining, charting, and ease-of-use to provide the complete database access tool for all NeXT users. A true paper interface simplifies the design and browsing of reports. The intuitive graphical query builder lets anyone create ad hoc queries without learning SQL. Complete Access can be used with Rosebase, Sybase, Oracle or any other SQL database for which an adaptor is available.

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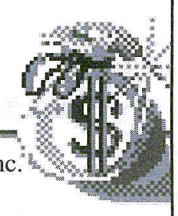

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Baby, Can You Drive My PC?

JOHN PERRY BARLOW

As you may recall, I concluded last month's column with the bold assertion that I thought NEXTSTEP might now make good practical sense for such entities as brokerage houses that trade entirely in the virtual world.

In such fluid terrain as they inhabit, relevance is constantly being redefined. It follows that one's methods of assessing the environment must be as rapidly mutable as the environment itself, and the electronic genome of NEXTSTEP can spit out new code quicker than a spreading virus.

For this reason, I find that NEXTSTEP is suddenly being taken seriously by people who might once have dismissed it. In recent days, I've talked with MIS types from as far away as Holland who are taking a serious look at it for the first time.

It makes an enormous difference that you can now experiment with this still-exotic OS for $800 a copy rather than $8000. There are also important accounting differences in software versus hardware acquisition that make NEXTSTEP much more attractive to potential customers as a soft product.

But at a certain point in these conversations, I'm always given a level look and asked something like, "But do you really think NEXTSTEP makes sense now? Don't you have any doubts?"

Hell, yes. It's my job to have doubts. First, of course, is the concern any rational person might have about the continuing survival of NeXT. But I'm not sure this should be a major consideration. MIS can always sigh and haul out that fat stack of Windows NT installation disks . . . whenever Microsoft gets around to shipping them.

Then there are compatibility problems. But in a conventional financial-services shop, the shrinkwrapped software that runs beside your custom apps usually consists of programs such as Lotus 1-2-3, for which native NEXTSTEP software like Athena Design's Mesa shows a high degree of compatibility.

But I'm worried about drivers. In the many years since I had a PC, I had forgotten that the price of a truly open computer architecture is a purgatory of configuration. While I have a strong philosophical agreement with the principle of open systems, it's another matter when you're actually down there among the DIP switches and the .SYS files.

This is not going to be an easy problem to solve. In the DOS, Windows, and, presumably, NT universes, drivers are often written by the device manufacturers themselves in the expectation that their hardware will be encountering one of these operating systems. It is unlikely they will create additional drivers for an operating system that will be found on only a small percentage of machines.

The driver problem is a liability that might become an asset over time. NeXT's object orientation should make it possible to produce drivers more rapidly than for the competition. Eventually, it shouldn't be necessary for each application to have a driver for every monitor and printer. Under NEXTSTEP, applications will deal with the OS rather than addressing hardware.

Still, it's going to be a mess. It's already a mess. I'm preparing for some character-building experiences.

Hey, you know what would be really cool? A system in which the hardware was designed from the bottom up to be integrated with the software that runs on it. Then we'd never have to think about these things. We could just plug 'em in and go.

Nahhhh, it'd never make it in the marketplace.

JOHN PERRY BARLOW *drives under a variety of influences.*

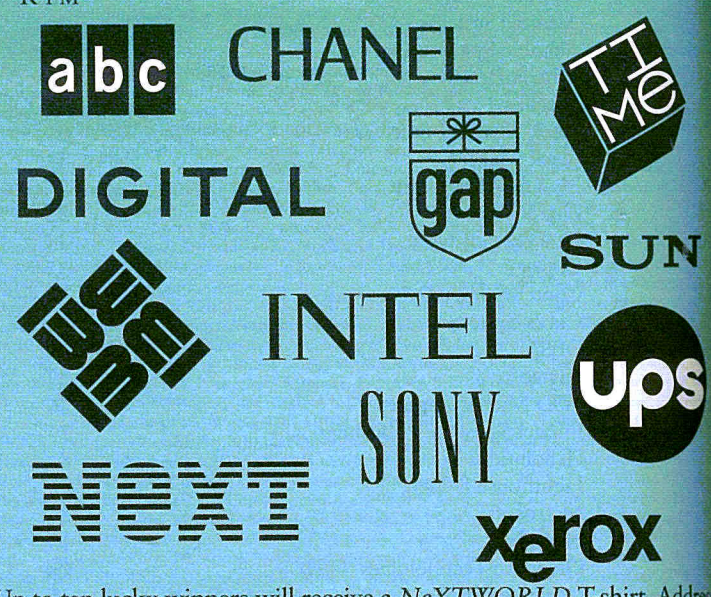
NeXT Meets IBM

NEXT GAMES

by SCOTT KIM

Now that the NEXTSTEP environment is moving to the PC platforms originally designed by IBM, NeXT will be able to reach a much larger audience. To commemorate this event, I have designed the NeXT logo in the style of the IBM logo.

Interestingly, the logos for both NeXT and IBM were created by the same person: graphic designer Paul Rand. Rand's work includes enduring designs for such companies as UPS, ABC, and Westinghouse. His logos are simple, direct, and memorable.



CONTEST

At right are the names of 12 widely known companies. Each name is written in the logo style of one of the other companies. Can you identify the names of the other companies? Write your answers in the blanks below.

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NeXT in style of IBM
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Up to ten lucky winners will receive a *NeXTWORLD* T-shirt. Address entries to Puzzle Editor, *NeXTWORLD*, 501 Second St., San Francisco, CA 94107. Or fax us at 415/978-3196. And while you're at it, write us a note about the magazine. Entries must be received by September 15, 19

The answers to "Mental Blocks" in the June/July issue are: A–G, B–H, C–K, D–P, E–L, F–M, I–O, J–N.

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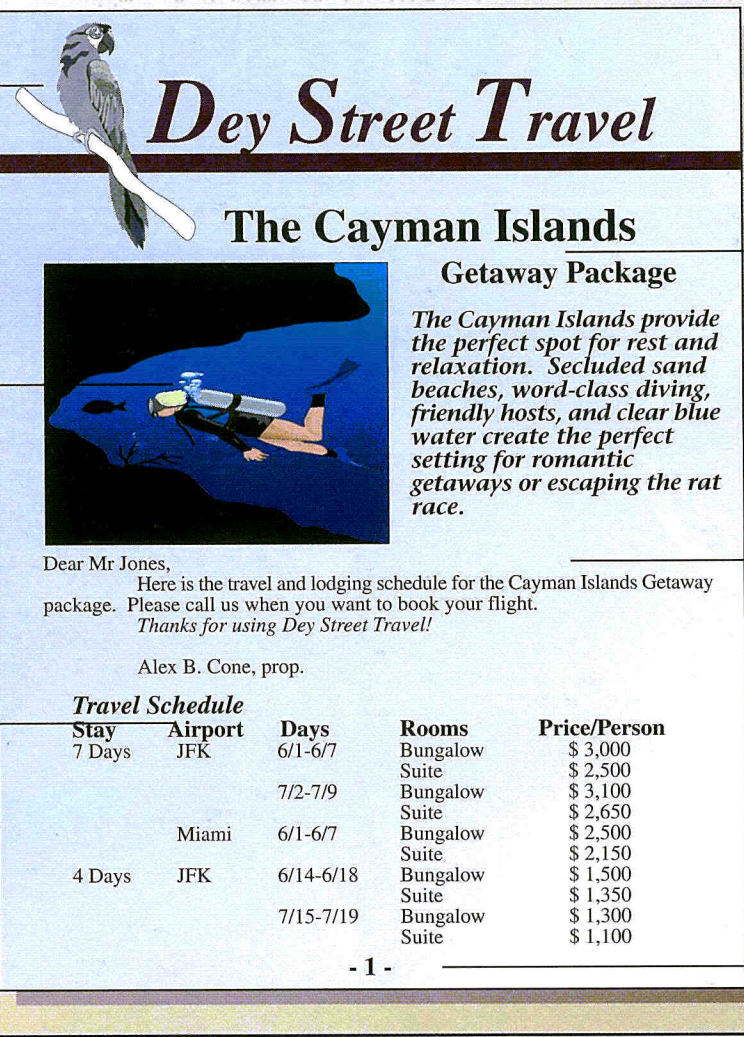

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